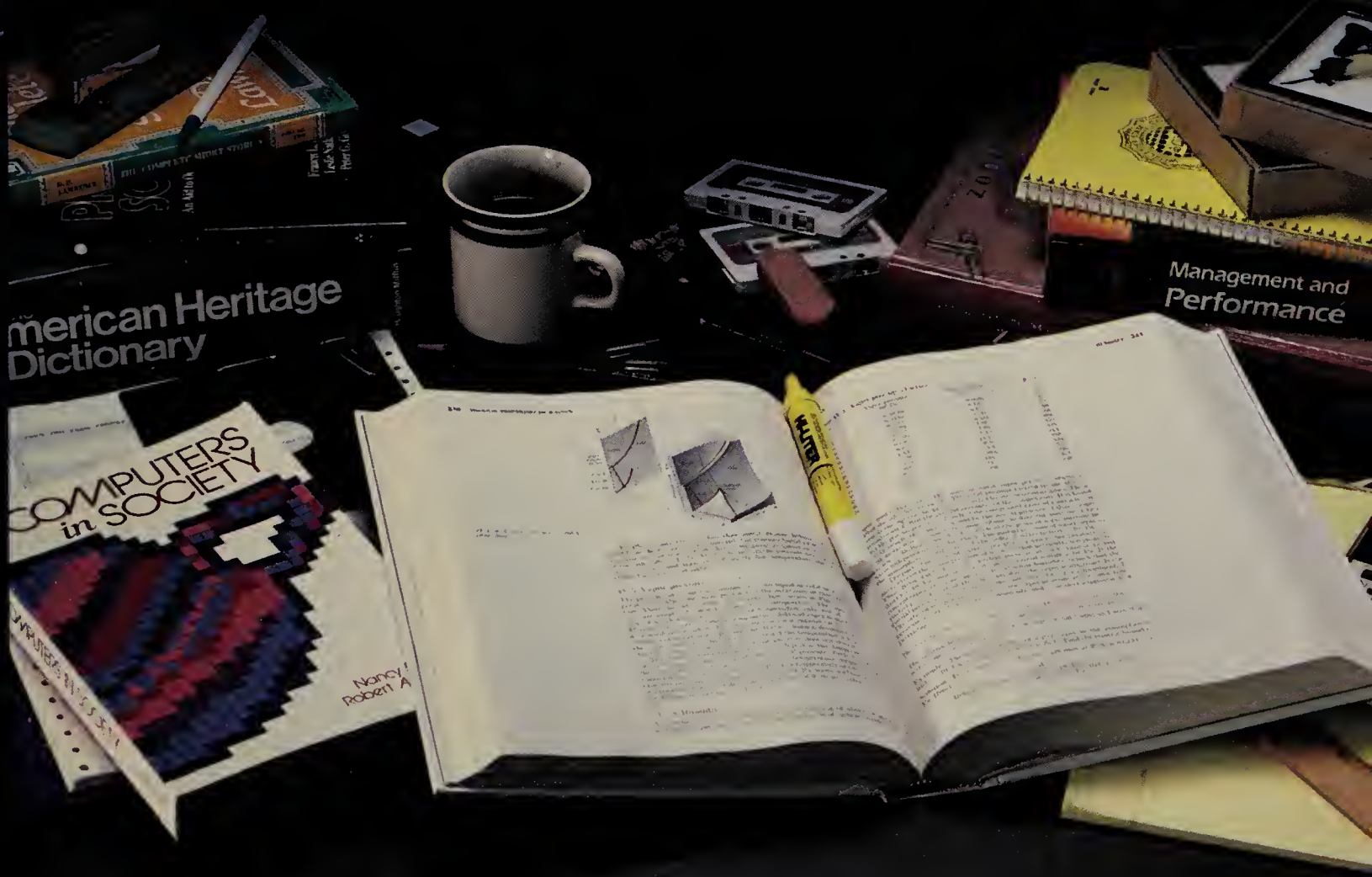
WORCESTER STATE COLLEGE



Catalog

Graduate & Undergraduate

1984-86

ACCREDITATION

Worcester State College is accredited by the New England Association of Schools and Colleges. Individual programs are also accredited by the National League for Nursing, the National Council for Accreditation of Teacher Education, and the Joint Council for Accreditation of Allied Health Programs of the American Medical Association.

POLICY ON NON-DISCRIMINATION

The College is committed to a policy of non-discrimination and affirmative action in its educational programs, activities, and employment practices. It is the policy not to discriminate on the basis of race, color, national origin, sex, age, religion, or handicap. The College maintains its policy of non-discrimination and affirmative action in fulfillment of the requirements of Executive Orders 11246 and 11375, Titles IV, VI, VII, IX, and X of the Civil Rights Act of 1964 as amended in 1972; Sections 503 and 504 of the Rehabilitation Act of 1973, as amended; Section 402, Vietnam War Veterans Readjustment Assistance Act of 1974; pertinent laws, regulations, and executive directives of Massachusetts, including regulatory procedures set forth by the Board of Higher Education under 820 of the Acts of 1973; and other applicable federal and state statutes.

The Director, Affirmative Action, may be contacted regarding the College's policy of non-discrimination and affirmative action (including compliance with Section 504 of the Rehabilitation Act of 1973, as amended).

UNDERGRADUATE AND GRADUATE CATALOG

WORCESTER STATE COLLEGE

486 Chandler Street, Worcester, MA 01602-2597

Academic Years

1984-1986

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1. General Information

PROLOGUE

From its founding in 1874 Worcester State College has been dedicated to educational programs which lead to self-enrichment and to careers in the professions, government, business, and industry.

As a public, state-funded college governed by a local Board of Trustees under the direction of the Massachusetts Board of Regents of Higher Education, Worcester State College is empowered to award bachelor's degrees in education and in the arts and sciences as well as a number of master's degrees and certificates of advanced graduate study. While continuing its tradition of serving the residents of the Commonwelath and especially the Greater Worcester area, the College has earned a reputation for quality teaching by dedicated faculty in classes of moderate size and for programs responsive to its students' and society's changing needs.

Worcester State College, situated in New England's second largest metropolis, is within an hour's drive of all the major population centers in the region. The College is convenient to the Worcester Airport, a regional facility, and to Interstate Highways 90 (the Massachusetts Turnpike), 190, and 290. The campus is served by busses of the Worcester Regional Transit Authority and by the shuttle bus service of the Worcester Consortium for Higher Education, which links ten area institutions of higher education.

MISSION STATEMENT

To assure that society at large and the Commonwealth of Massachusetts are well served by its graduates, Worcester State College strives to offer programs of excellence in undergraduate, graduate, and continuing higher education. The College is committed to providing accessible and affordable, and high quality educational opportunities in a full spectrum of liberal and professional fields. Baccalaureate studies built around a required core of liberal arts foster analytical and creative skills, and guarantee that each professional and preprofessional graduate understands our culture, our institutions, and our values.

Within the context of this mission Worcester State College affirms certain objectives. Specifically, we seek to integrate classroom instruction and professional experience, to develop independent inquiry and investigative skills, and to expose students to a variety of viewpoints, encouraging them to clarify both their personal and professional philosophies and to lead lives of initiative, imagination, and responsibility. We seek to allocate our human and physical resources in response to changing needs and conditions. We seek to encourage community service through faculty expertise and student and alumni involvement. Finally, the College endeavors to serve as a cultural center and resource for central New England. Each of these general objectives exemplifies our commitment to excellence in teaching as our prime responsibility.

UNDERGRADUATE MAJOR AND MINOR PROGRAMS

All of the following programs are offered during the day; those marked by an asterisk are also offered in the evening through the Program of Continuing Education.

Discipline	Major	Minor	Sponsoring Department
Art*		x	Media, Arts and Philosophy
Biology	x	x	Natural and Earth Sciences
Business Administration*	x	x	Business Administration and Economics
Chemical Engineering + (Freshman and Sophomore years)			Natural and Earth Sciences
Chemistry	x	x	Natural and Earth Sciences
Civil Engineering + (Freshman and Sophomore years)			Mathematics and Computer Science
Coaching		x	Health Sciences
Communication Disorders	x	x	Communication Disorders
Computer Science*	x	x	Mathematics and Computer Science

Discipline	Major	Minor	Sponsoring Department
Early Childhood Education	x		Education and Human Resources
Economics*	x	x	Business Administration and Economics
Elementary Education	x		Education and Human Resources
English*	x	x	Languages and Literature
Foreign Languages	x		Languages and Literature
French	x	x	Languages and Literature
Geography	x	x	Natural and Earth Sciences
Health Science*	x	x	Health Sciences
History*	x	x	History and Political Science
Mathematics*	x	x	Mathematics and Computer Science
Mechanical Engineering + (Freshman and Sophomore years)			Natural and Earth Sciences
Media	x	x	Media, Arts and Philosophy
Music		x	Media, Arts and Philosophy
Natural Science*	x	x	Natural and Earth Sciences
Nursing*	x		Nursing
Occupational Therapy* (approval pending)	x		Health Sciences
Philosophy		x	Media, Arts and Philosophy
Physical Education		x	Health Sciences
Physics	x	x	Natural and Earth Sciences
Political Science		x	History and Political Science
Psychology*	x	x	Social and Behavioral Sciences
Secondary Education		x	Education and Human Resources
Sociology	x	x	Social and Behavioral Sciences
Spanish	x	x	Languages and Literature
Sports Medicine		x	Health Sciences
Theatre		x	Media, Arts and Philosophy
Urban Studies*	x	x	Education and Human Resources

The following interdisciplinary concentrations are also available:

Criminal Justice*	Social and Behavioral Sciences; Education and Human Resources
Gerontology	Education and Human Resources
Middle East Studies	History and Political Science
Nuclear Medicine Technology	Natural and Earth Sciences

+ A Transfer Program (See p. 72).

GRADUATE DEGREE PROGRAMS

Degree	Discipline or Concentration	Sponsoring Department
Master of Arts	Biology	Natural and Earth Sciences
Master of Science	Biology	Natural and Earth Sciences
	Speech Pathology/ Audiology	Communication Disorders

Degree	Discipline or Concentration	Sponsoring Department
Master of Education	Adult Education	Education and Human Resources
	Biology	Natural and Earth Sciences
	Chemistry	Natural and Earth Sciences
	Community Education	Education and Human Resources
	Computer Science	Mathematics and Computer Science
	Counselor Training	Education and Human Resources
	Early Childhood Education	Education and Human Resources
	Elementary Education	Education and Human Resources
	English	Languages and Literature
	Generic Consulting Teacher for Children with Mild Special Needs	Education and Human Resources
	Health Education	Health Sciences
	History	History and Political Science
	Language Arts	Education and Human Resources
	Leadership and Educational Administration	Education and Human Resources
	Mathematics	Mathematics and Computer Science
	Natural Science	Natural and Earth Sciences
	Reading	Education and Human Resources
	Secondary Education	Education and Human Resources
	Spanish	Languages and Literature
	Urban Education	Education and Human Resources
Master of Applied Mathematics		Mathematics and Computer Science
Master of Human Service Management		Education and Human Resources
Master of Education and Certificate of Advanced Graduate Study	School Psychology	Social and Behavioral Sciences/ Education and Human Resources
Certificate of Advanced Graduate Study	Counselor Training	Education and Human Resources
	Curriculum and Instruction	Education and Human Resources
	Educational Administration and Leadership	Education and Human Resources
	Generic Special Needs	Education and Human Resources
	Secondary Education	Education and Human Resources
Licensure Program Certification for the Generic Special Teacher of Children with Mild Special Needs		Education and Human Resources
School Principal Certificate Program		Education and Human Resources

2. The College

THE CAMPUS

The College, located on fifty-eight acres of rolling, wooded land facing Chandler Street on the west side of Worcester, combines urban convenience and a suburban setting. It contains the following facilities:

Administration Building

Constructed in 1932 to inaugurate the College's new site, the administration building houses the central administration, Admission and Financial Aid offices, several suites of faculty offices, classrooms, laboratories, and a small auditorium which has been renovated and equipped for theatrical productions.

Sullivan Academic Center

Named for the College's president from 1947 to 1970, this building is the principal instructional center on campus. It contains a large lecture hall, science laboratories, and a large attached auditorium. Among its interesting facilities is the Communication Disorders Clinic, where the general public as well as the College community may obtain evaluation and habilitative assistance for organic and developmental language, speech, and hearing disorders. The Clinic is a modern instance of Worcester State College's long tradition of combining professional training with service to the community. Also located in the Sullivan Center is the Division of Graduate and Continuing Education, which adminsters to the educational needs of thousands of part-time learners annually.

Learning Resources Center

The Learning Resources Center houses the library, a comfortable place for study and research with over 170,000 volumes and approximately nine hundred current periodicals. It also encompasses a complex of modern telecommunications and electronic learning facilities. Among these is the Computer Center, supported by an advanced CDC mainframe and including a network of microcomputer laboratories. All students have unlimited access to the Computer Center without cost. The LRC also includes a color television studio and production facility of professional quality where students learn the creative use of modern communications technology, photographic laboratories, an audio-visual center equipped for the production of slides and tapes, and the student-operated radio station WSCW. Seminar rooms, classrooms, lecture halls, and faculty offices are also located in this building.

Gymnasium Building

In addition to housing the art and physical education faculty and indoor athletic and recreational facilities, the gymnasium building also serves as headquarters of the Institute for Community Services and one of the College's two child care centers, which provide an educationally enriched environment for pre-school children of students, faculty, and staff (and of other area parents as space permits).

Chandler Village

Chandler Village, which accommodates nearly five hundred full-time undergraduate students, is an unusual and distinctive residential townhouse grouping. Further information can be found under "Student Affairs," p. 13.

Student Center

The newest building on campus is the colorful and cheerful Student Center often called "Campus Center," which serves the entire population of the College. Conveniently situated at the physical center of the campus, this facility contains a cafeteria, dining hall, snack bar, pub, and lounges; rooms for games, music, and television watching; offices for Student Affairs personnel and student orgranizations; a print center; a two hundred-seat auditorium; a dancing and exhibit area; a bookstore, and several meeting rooms. It has been accurately described as the "living room or hearthstone of the College."

Chandler Complex

Across Chandler Street from the main campus, the College has recently renovated one wing of an instructional center. The Chandler Complex now provides updated classrooms and faculty offices.

Outdoor Facilities

In recent years the College has taken increasing advantage of its naturally attractive grounds. The football field, baseball and softball diamonds, field

hockey and all-purpose field, tennis courts, and tartan track encircle Lake Ellie, a small pond which has become a campus tradition.

STUDENT AFFAIRS

The Student Affairs Division of Worcester State College is dedicated to assisting students in the exploration and development of their interests, skills, and talents. Complementing and supporting the academic program of the College, Student Affairs seeks to help students to define and reach their personal goals and to foster their capacity for leadership.

Orientation

The orientation program at the beginning of each semester introduces incoming undergraduates to the college and to campus life; to its personnel, programs, services, and activities; and to each other.

The Personal Development/Counseling Center

The Personal Development/Counseling Center offers seminars and support-group programs on a variety of topics related to personal, social, and professional growth and development. Individual counseling is also available. The Center regularly administers interest, aptitude, and personality tests and evaluates them in conjunction with the student to assist in career and personal decision-making. The Center also administers CLEP examinations and provides applications and study guides for various national testing programs.

Career Development and Placement Center

The Career Development and Placement Center assists students to define their professional interests and abilities, to select appropriate careers, and to prepare themselves effectively for employment. Additional services include interest testing, graduate and professional school advising, on-campus recruiting, providing information on internships, and conducting seminars on such subjects as the preparation of resumes, the job interview, and the search for a position. The Center also maintains current listings of available professional positions corresponding to the College's academic programs and listings of part-time and summer employment opportunities. Students majoring or minoring in education should initiate their applications for Massachusetts teacher certification at the Center. Services of the Career Development/Placement Center are available to all undergraduate and graduate degree candidates and to alumni.

Health Services

The Health Services Office is located off the foyer of the gymnasium building. A full-time registered nurse is on duty 8:30 a.m. to 4:30 p.m. Monday through Friday, and the college physician is in attendance three mornings a week.

A comprehensive, twelve-month student health and accident insurance plan providing twenty-four-hour coverage anywhere in the world is available to all students. Detailed information on this plan is available from the Student Affairs Office and through the Health Services Office; health insurance cards and claim forms are also available in these locations.

Athletics and Recreation

The objectives of the Athletic Department include promoting qualities of leadership and sportsmanship, enhancing emotional and social development, and fostering the development of physical skills of undergraduate students. Thus the Athletic Department offers a wide range of intramural and intercollegiate activities.

As a member of the National Collegiate Athletic Association (NCAA), the Massachusetts State College Athletic Conference (MSCAC), the Eastern College Athletic Conference (ECAC), and the National, Eastern, and Massachusetts Associations for Intercollegiate Activities for Women (AIAW, MAIAW), the college competes in such sports as baseball, basketball, softball, golf, ice hockey, swimming, tennis, cross country, field hockey, track, and volleyball at the Division III level, while football, crew, and equestrian are offered at the club level. Two Worcester State College teams (club football and women's basketball) have each won national championships in recent years.

The recreation program under the supervision of the Student Affairs Division provides many varied opportunities for social involvement from mountain climbing, camping, skiing, and biking to billiards, table tennis, table games and video games.

Student Activities and Organizations

A wide spectrum of cultural, social, and service activities complement classroom studies at the College. Films, topical lectures, arts and crafts exhibits, performing artists, dances, field trips, and charter travel services are regular features. Students are encouraged to participate in one or more of the diverse services and programming organizations: WSCW radio, **The Student Voice** (weekly newspaper), the Yearbook, Lancer Society, Bluemoon Coffeehouse, Exhibitionists, Program Council, Lecture Committee, Student Government Association, Poetry Center, Third World Alliance, Outdoor Club, Ski Club, and many others, more than thirty in all. The SGA participates in such annual events as Homecoming, Parents' Weekend, Winter Carnival, and Senior Week.

Please consult the **Student Guide** for detailed information on Student Government and other organizations and activities.

Residential Services

The College offers its resident students a choice of lifestyles, each of which is designed to encourage maximum development of the student's potential. The "living-learning" environment provides for various needs. For freshmen, a modified apartment option permits close contact with upperclass student advisors and assists the new student in making a rapid and effective adjustment to college life. Upper-division students who wish to experience a close academic community and who have demonstrated both good citizenship and academic attainment have the option of living in apartments with others sharing common interests and achievements. Other upper-division students live in traditional apartments with either large or small group settings in proximity to the resident staff. Three types of sleeping accommodations—singles, doubles, and multiples—are available. Although space in the residential halls is provided on a contractual basis for the entire academic year, room rates are billed on a semester basis and must be paid prior to occupancy each semester. (See Section 3, "Room and Board.")

Off-campus housing information may be obtained from the Manager, Residential Life and Services. Listings of available accommodations in private homes, rooming houses, and apartments are also maintained by the Student Affairs Office. Students are responsible for making their own arrangements with landlords and must register their local address with the Student Affairs Office.

Foreign Student Services

The Vice President, Student Affairs, as advisor to foreign students assists them with immigration matters, international student activities, and personal counseling.

The College is authorized under federal law to enroll nonimmigrant alien students, but it is necessary that any student who is not a United States citizen contact the Vice President, Student Affairs, upon acceptance to the College.

Alternative for Individual Development (AID)

AID is an educational assistance program for minority students and others who are educationally, culturally, or economically disadvantaged. The program offers such services as counseling, academic assistance, training in effective study skills, and financial aid information with the recognition that otherwise many students would be unlikely to achieve their educational objectives.

In addition to assisting students already enrolled, AID actively recruits students identifiable as possessing the motivation and desire to succeed in college despite lack of success in high school or on SAT examinations. Students must, however, meet minimal admission requirements.

Veterans' Affairs

The Veterans' Affairs Office offers general information and counseling appropriate to veterans and dependents of veterans enrolled at the College. It provides direct contact between the veteran and the VA regional office in Boston. It is also the obligation of the Office to ensure that the standards of

educational progress required by the VA are met. Questions concerning eligibility for benefits and VA standards for students should be directed to this office.

United Campus Ministry

The United Campus Ministry, an interfaith group composed of twenty clergy representing thirteen denominations, serves under the direction of a full-time chaplain who acts as its chairman. Members of the UCM provide religious services and pastoral counseling for all students, and are available for personal consultation when needed.

COMMUNITY RELATIONS

The College strives to extend its resources to the community and to involve the community in its educational endeavors. The activities listed below describe some of these efforts.

Alumni Association and Office of Institutional Advancement

The Worcester State College Alumni Association seeks to maintain lifelong fellowship among alumni, the great majority of whom continue to live and work in the Worcester area, and to assist their alma mater. Toward these goals the Association publishes the **Alumni Newsletter,** sponsors class reunions to honor anniversary classes, stages an annual fall homecoming, hosts a reception for graduating seniors, and annually raises funds for its scholarship program and for the advancement of the College.

Graduates of the College are encouraged to provide the Association with current addresses, employment information, and other items of interest to its members; to visit the campus; and particularly to join and serve on its various committees.

Cultural and Social Events

Every year the College calendar includes numerous programs and events to which the public is invited. Thousands of people annually participate in workshops sponsored by the Division of Graduate and Continuing Education and in conferences on such topics as energy, elder affairs, and hearing disabilities. The following sample of organizations and ongoing activities demonstrates the variety of sources from which such initiatives arise.

Visiting Scholar Program: Each semester a Distinguished Visiting Scholar is invited to a period of residence at the College to teach, address student and community groups, and serve as a resource person in his or her academic specialty. Each semester's visiting scholar represents a different academic discipline.

Center for the Study of Human Rights: Established in 1982, the Center is the first such academic center in New England and has already offered lectures and symposia on human rights issues in Northern Ireland, South Africa, the Middle East, Central America, the Philippines, and elsewhere. The Center serves as a liaison with other human rights organizations in the area, promotes the development of human rights curricula and studies on the college and secondary levels, and has established a collection of human rights literature for students and researchers in the field.

The Poetry Center: The programs of this student organization are often presented in conjunction with the Worcester County Poetry Association and other area organizations. Seamus Heaney, Czeslaw Milosz, Dennis Brutus, and Gwendolyn Brooks are some of the nationally and internationally acclaimed poets who have read recently on campus.

The President's Lecture Series: Since 1978 an outstanding member of the Worcester State College academic community has been chosen annually to deliver the President's Lecture. This series has proven to be an incentive for enriching and promoting faculty research and scholarship as well as an intellectual challenge to the community at large.

Institute for Community Service: The Institute for Community Service, which is managed by the Division of Graduate and Continuing Education, was established in 1974 to promote linkages between the college and the community. Through various projects, the College has extended these linkages with a variety of community, human service, educational, and other organizations over the last several years. These projects have been supported through a variety of sources to include grants, joint community sponsorship, and College resources.

Recent activities associated with the Institute include community and adult education grant projects, the Center for the Study of Human Rights, activities for elders, and training for human service workers and specialized community groups. Frequently these programs relate to new academic programs.

3. Undergraduate Study

ADMISSION

Eligibility

High School Preparation: The following high school studies are strongly recommended:

1. Three years of English. These should be college preparatory courses in composition and literature which include the development of writing and comprehension skills.

2. Two years of mathematics. These should be college preparatory courses in such subjects as algebra, geometry, trigonometry, elementary functions, and mathematical analysis. A fourth year of mathematics, usually calculus, is strongly recommended for students who plan to enter fields such as engineering or physics.

3. Two years of natural science, both of which should include laboratory.

4. Two years of social science, which should include one year of United States history and government.

5. Three units in suitable electives.

Scholastic Aptitude Test Scores and Class Rank: The following combinations of SAT scores and weighted class rank are required. Exceptions may be made for economically or educationally disadvantaged applicants, GED recipients, vocational school graduates, students with special talents, and certain others. Transfer students and those who have been out of school for three or more years are specifically exempted.

Combined SAT score		500	550	600	650	700	750	800	850	900	950	1000	1050	1100	SAT alone
Weighted rank in graduating class	Rank alone	upper 25 %	30	35	40	45	50	60	65	70	75	80	85	90	

This table shows that a student with a combined SAT score of 650 must rank in the upper 40% of the graduating class. A student with a combined SAT score of 950 must rank in the upper 75% of the class. Students with combined SAT scores above 1100 are eligible for admission regardless of class rank, just as students who rank above the upper 25% of their graduating class are eligible regardless of their SAT scores.

Learning-disabled students need not submit SAT scores but must supply a letter certifying enrollment in a legally recognized special education program as well as a copy of the core evaluation or equivalent testing. Learning-disabled applicants will be admitted only if the College or other agencies can provide the learning aids or other supportive resources necessary for baccalaureate level achievement.

The Application Process: Directions for Freshman Applicants

Massachusetts high school students can obtain application forms from their school counselors; forms may also be obtained from the Admissions Office, Worcester State College, 486 Chandler Street, Worcester, MA 01602 or by calling 793-8040. Each applicant must supply the following materials:

1. Proof of graduation from an accredited high school or a high school equivalency certificate. Present high school students should request an official high school transcript including at least the first marking period of the senior year.

2. Record of the completion of the College Board Scholastic Aptitude Test.

3. Record of the completion of the College Board Student Descriptive Questionnaire.

4. A completed Worcester State College application form.

5. Payment of an application fee: $10.00 for Commonwealth residents, $40.00 for all others.

In addition, applicants seeking Advanced Placement credit must arrange to have scores sent to the Admissions Office.

The Application Process: Directions for Transfer Students

Transcripts from colleges previously attended are the primary factor in determining acceptance to the College. To be considered a transfer applicant, a student must have completed successfully at least twelve hours at an accredited college or colleges. The following materials must be supplied:

1. An official transcript of all courses completed at each institution attended.

2. A completed Worcester State College application form (the same form used by freshmen).

3. Payment of an application fee: $10.00 for Commonwealth residents, $40.00 for all others.

To qualify for a degree, the student must complete at least thirty of the 128 required credits at Worcester State College. Credits earned elsewhere will be evaluated with respect to curricular requirements at the College; indication of acceptable transfer courses will be included with the acceptance letter.

Commonwealth Transfer Compact: Throughout public higher education in the Commonwealth an associate degree from any community college signatory to the Commonwealth Transfer Compact will be honored as a unit and construed as: (1) completion of at least 60 hours of work toward a baccalaureate degree; and (2) completion of at least 33 credit hours toward fulfillment of the general education requirements for the baccalaureate degree. All associate degree-holders accepted for transfer under the Compact will be subject to no special requirements beyond those specified as major department and/or graduation requirements for students who originally enrolled in the receiving institution as freshmen.

The Application Process: Directions for Part-Time Students

Students who register for eleven or fewer credits per semester are classified as part-time students. Part-time day students should follow the procedures described above, while those who expect to attend evenings should register through the Division of Graduate and Continuing Education (see Section 5, p. 46). Opportunities exist for non-degree students to attend day classes on a space-available basis. Part-time students, it should be noted, are ineligible for on-campus housing and for participation in the athletic program.

All applicants should note that admission to the College does not guarantee acceptance to a particular major. Prerequisites, if any, for admission to majors are described in Section 6, "Departments and Programs."

TUITION AND FEES

The following schedule of tuition and fees applies to all day session registrants. (Part-time evening students will find their tuition and fee schedule in Section 5, p. 46.) In addition to the nonrefundable application fee of $18, students must upon acceptance pay a $50 nonrefundable tuition deposit which will be credited towards tuition upon entrance. Students are billed twice each year, before each new semester. Payment must be made before the due date specified on the bill, which is sent to the student's permanent address. It must be remitted by check or money order; the cancelled check is the student's receipt. If the College has handled a check presented against insufficient funds in the student's name, only a certified check, bank check, or money order will be accepted thereafter. All charges are subject to change.

Tuition Schedule

Status of Student	Residents of Massachusetts	Non-Residents of Massachusetts
Full-time (twelve or more credits) per semester	$444.00	$1488.00
Part-time (eleven or fewer credits) per credit	$ 37.00	$ 124.00

Massachusetts residents who are unemployed and have exhausted (or nearly exhausted) unemployment benefits are exempted from tuition, as are residents sixty years of age or older.

Fee Schedule Per Semester

Educational Services Fee	$ 8.50	Health Services Fee	$10.00
Student Center Fee	$15.00	Athletic Fee	$26.50
Activity Fee	$22.50	Parking Fee	$ 2.00
Library Fee	$12.50	(per academic year)	

The following fees are payable when applicable:

Orientation Fee	$ 5.00	Student Teaching Fee	$75.00
Late Registration Fee	$ 5.00	Placement Fee	$ 5.00

Room and Board

Resident students pay $535 and $433, respectively, per semester, for room and board. Upon acceptance as a resident, each student must pay a room reservation/damage deposit (RRD/DD) of $100 as follows:

1. A separate check for $50 must be submitted to the Admissions Office at the time of payment of the tuition deposit as determined by that office. Payment of this deposit and the resident's receipt of an agreement signed by the College will reserve a space until occupancy.

2. The remaining $50 of the RRD/DD will be billed with room rent.

The returning resident submits the initial $50 of the RRD/DD with a signed agreement at the time of room selection for the following year, the remaining $50 to be billed with room rent.

A student accepted as a commuting student at the College may submit to the Residence Hall Office $50 of the RRD/DD with a signed request to be considered for room assignment.

Refund Policy

Unless stated otherwise, all fees are nonrefundable after the first day of class.

Tuition Refunds to Students Withdrawing from the College: Official notice of withdrawal from the College must be made on a form available from the Vice President, Student Affairs.

The official date of withdrawal is that on which the completed form is received. Tuition is refunded according to the following schedule, the minimum forfeiture being $50; amounts are rounded to the nearest dollar.

First week of semester or earlier	Two thirds of tuition refunded
Second week of semester	Half of tuition refunded
Third week of semester	One third of tuition refunded
Fourth week of semester	No tuition refunded

The week is considered to end on Saturday.

Tuition Refunds to Massachusetts State Scholarship Holders: If the Bursar does not receive payment by the tenth week of the semester or by the date of the next semester pre-registration, the student must pay the outstanding tuition bill and will be reimbursed by the College when payment is received from the state. Otherwise, any student with an outstanding balance after the fourteenth week will be administratively dropped—that is, even though the student continues to meet his academic obligations, no grades will be issued. Part-time students' refunds are not initiated until the completion of the semester.

Room Refunds to Students Withdrawing from Residence Halls: Residents who wish to withdraw from a residence hall prior to occupancy may obtain a refund of the room fee provided written notice of intention to withdraw is given to the Director of Housing no later than thirty days before the beginning of either fall or spring semester **and** the College is able to fill the vacancy created by the student's withdrawal. A resident who wishes to withdraw from a residence hall during, or at the end of a semester may receive a *pro rata* refund of the room fee provided written notice is given to the Director of Housing prior to withdrawal **and** the College is able to fill the vacancy. Such *pro rata* refund shall be determined from the date of occupancy by the resident filling the vacancy.

FINANCIAL AID

All students are encouraged to apply for financial aid in order to meet the cost of education. To receive financial assistance from the College, students must be enrolled at least half-time in either an undergraduate or graduate degree program. In considering students for financial assistance, the College places emphasis upon financial need. This need is the amount by which the total costs of college attendance, including reasonable costs for transportation, room and board, and other personal expenses, exceed the expected family contribution. Each eligible student has equal access to the College's financial aid funds based upon the resources of both the parents and the student. Aid from the College supplements the contribution of the family.

Application Process: To provide a basis for equitable evaluation in determining need, the College participates in the College Scholarship Service (CSS). This organization calculates expected parental and student contributions from income and assets. All students applying for financial assistance must file a Financial Aid Form (FAF) with the College Scholarship Service, Box 2857, Princeton, New Jersey 08541. The FAF may be obtained through any high

school guidance office or through the Financial Aid Office. It takes approximately six weeks for CSS to process applications and forward its analysis to the College and other agencies. The Financial Aid Office will then send the applicant a Worcester State College Institutional Financial Aid Request Form to be completed and returned to the College. This form must be supported by a copy of both parents' and student's federal income tax returns for the preceding year or, in the cases of non-filers of federal income tax returns, supporting documentation of sources of income.

Deadlines: For students entering in the fall, the deadline for submission of all completed forms to the Financial Aid Office is March 1. Applications will be accepted after this date, but the availability of funds for eligible students is not guaranteed. The application deadline for students entering in the spring is November 1. In order to be considered for renewal funds, candidates must reapply each year, following the same application procedures. Although the amount and type of aid offered may change according to the funds available to the College and the dictates of program guidelines, applicants will continue to be eligible as long as financial need is demonstrated and as long as the student remains in good academic standing and continues to make satisfactory progress toward a degree.

Listed below are several federal and state-sponsored programs, including grants, loans, and jobs, which the College participates in and offers to its students.

Pell Grants

The Pell Grant is an entitlement program based upon family income and assets. There is no charge when application is made for the Pell Grant only. Within six to eight weeks of application the applicant receives a Student Assistance Report (SAR) from the U. S. Department of Education. The SAR should be checked for correctness and forwarded to the Financial Aid Office for further processing.

Individuals who have been awarded Pell Grants may use them to take day or evening courses provided that they enroll in a minimum of two courses per semester in a program leading to an undergraduate degree and maintain satisfactory academic standing. Graduate students are not eligible for Pell Grants.

Supplemental Educational Opportunity Grant Program (SEOG)

This is a federal program providing grants to eligible undergraduate students in amounts ranging from $200 to $2000 per year, dependent upon the availability of funds.

National Direct Student Loan Program (NDSL)

The NDSL program is designed for eligible students who are enrolled at least half-time in an undergraduate or graduate academic program and who require a loan to meet their educational expenses. Repayment of the loan at 5%

interest commences six months after the student is no longer enrolled in college.

Guaranteed Student Loan Program (GSLP)

Another source of financial assistance for the education of undergraduate or graduate students, this program is designed to assist middle-income families. It enables an undergraduate student to borrow up to $2500 per year, a graduate student to borrow up to $5000 per year, depending on family income, directly from a bank, credit union, or savings and loan association at a maximum interest rate of 9%. Repayment begins six months after the student is no longer enrolled in college. Students who wish to apply for guaranteed loans should obtain the necessary application forms, needs tests, and statements of compliance from the College or their local lending institution. After receiving the completed forms from either bank or student, the Financial Aid Office will certify enrollment and college costs, and will then recommend to the lender institution an appropriate loan amount in accordance with federal legislation. The federal government will pay the interest while the student remains in good academic standing until the time for repayment begins.

Parent Loan for Undergraduate Students (PLUS)

Parents of dependent undergraduate students, regardless of family income, can obtain PLUS loans through specific lenders. The interest rate on PLUS loans is 12% with the first payment due within forty-five days of disbursement of the loan. PLUS loans may be obtained in addition to the Guaranteed Student Loan. A PLUS loan may also be an alternative for families who may not qualify for financial assistance from other sources. Upon demonstration of adequate credit capacity, parents may borrow up to $3000 per year to a total of $15,000 for each child's undergraduate education.

A graduate student may borrow through the PLUS loan program an additional $3000 per year, making a total of $8000 per year when combining the PLUS and GSLP loans.

College Work Study Program (CWSP)

This program is designed to assist undergraduate and graduate students who are enrolled in at least a part-time program of study, have financial need, and can earn a part of their educational expenses. Students are assigned to various departments or agencies on or off campus and are paid at an hourly rate in accordance with campus policies and federal regulations. Availability of funds depends upon federal allocation.

Massachusetts State Scholarships (MSS)

These $400 annual stipends are designed to assist eligible students with academic proficiency. Students apply by listing MSS (0058) as a recipient on the Financial Aid Form and submitting the form to College Scholarship Service for processing. The deadline for applying for a Massachusetts State Scholarship as a new applicant is March 1; renewal applications are due each April 1.

Tuition Waiver Reduction

The following guidelines will help students most in need to receive the maximum assistance in meeting educational costs. To be eligible for tuition waiver reductions, a student must:

1. be enrolled in a day program leading to a bachelor's degree,
2. be a United States citizen or eligible non-citizen as defined by federal guidelines for financial aid eligibility,
3. be a legal resident of Massachusetts,
4. have applied for the Pell Grant,
5. demonstrate financial need as defined by federal guidelines,
6. apply for financial aid by completing the FAF, and
7. apply for financial aid at Worcester State College.

Tuition Exemption Scholarships

Massachusetts National Guard Education Scholarships: A 50% tuition exemption scholarship is available to any member of the Massachusetts Army or Air National Guard, renewable annually, when the appropriate certificates and credentials are submitted to the office of the Bursar. (Massachusetts General Laws, Chapter 33, Section 137).

Massachusetts Vietnam Veterans' Scholarships: A tuition exemption scholarship is available to any eligible veteran with service credited to the Commonwealth of Massachusetts who served a minimum of ninety days between August 5, 1964 and May 7, 1975, or who served 180 days between February 1, 1955 and August 4, 1964 and whose discharge was other than dishonorable. Appropriate certificates and credentials must be submitted to the office of the Bursar. (Massachusetts General Laws, Chapter 601, 1966; and Chapter 842, 1977, Sections 1, 2, and 3,)

Police and Fire Department Education Scholarships: A tuition exemption scholarship is available to any regular member of the police or fire department of a city or town of Massachusetts. Appropriate certificates and credentials must be submitted to the office of the Bursar. (Massachusetts General Laws, Chapter 73, Section 20.)

In addition, any full-time student whose parent's death occurred in the line of duty as a police, fire, or correction officer is eligible for a full tuition scholarship. Requests for consideration should be forwarded to the Board of Regents of Higher Education, One Ashburton Place, Boston, MA 02108 between January 1 and May 1 of the appropriate year. If the applicant files after May 1, an award will be made if funds are available. Recipients will be notified and the awards paid directly to the College. Renewal applicants need file no forms.

Honor Scholarship Program: Honor Scholarships are awarded to the four entering freshmen with the highest scores on the Scholastic Aptitude Test of those taken in each Massachusetts senatorial district. The student must be enrolled full time and must be a permanent legal resident of Massachusetts as of September 1 of the year prior to the date of application. To apply, the student must indicate on the November or January SAT score sheet that the Massachusetts Board of Regents (code 0558) should receive the test results.

The award covers the cost of tuition for up to four years of undergraduate study and will be paid directly to the College.

Unemployed and Elderly Residents' Scholarships: A tuition exemption scholarship is available to unemployed Massachusetts residents who have exhausted (or nearly exhausted) unemployment benefits. Tuition exemption scholarships are also available to residents sixty years of age or older. Supporting documents must be submitted to the Financial Aid Office.

Worcester State College Scholarships

The Worcester State College Scholarship Program grants awards to full-time undergraduate students who demonstrate a commitment to scholarly excellence. Both entering and currently enrolled students may apply. There are four scholarship categories:

1. WSC Presidential Scholarships: Awards are limited in number and are given to students who, as Presidential Scholars, exemplify the quest for academic excellence. Financial need is not considered.
2. WSC Perpetual Scholarships: Each award has its own eligibility criteria. Individual Perpetual Scholarship brochures should be studied to determine eligibility.
3. WSC Annual Scholarships: Renewable awards are made to students who have attained academic success while actively involved in community service. Financial need is not considered.
4. WSC Designated Scholarships: Awards vary in amount, eligibility, and requirements. Applicants should review the criteria for each award to determine eligibility.

Further information can be obtained from the Office of the Undergraduate Dean.

Other Scholarships

To give recognition and prestige to student achievement on campus, several academic departments, clubs, and campus organizations sponsor scholarships and monetary awards to deserving students. Information can be obtained from the Office of the Undergraduate Dean.

Tuition Payment Plans

Monthly payment plans through outside lending institutions are available for families who wish to avoid a large outlay of cash at the beginning of each semester. For further information, contact the office of the Vice President, Administration and Finance.

Employment Opportunities on Campus

Aside from the federally sponsored Work Study Program, a considerable number of students earn money working in the Campus Center, bookstore, library, and dining areas. Applications can be obtained through these individual facilities.

UNDERGRADUATE PROGRAMS

General Requirements for the Baccalaureate Degree

Residence: Every candidate for a baccalaureate degree must complete 128 semester-hour credits, of which a minimum of thirty must be earned at Worcester State College. The usual period of residence and study required of a student who enters as a freshman is four years. Transfer credit within the major must be approved by the major department. Students must meet the degree requirements of the class with which they plan to graduate.

Quality Point Average: The College assigns quality points to each letter grade according to the following scale:

A	4.0	B–	2.7	D+	1.2
A–	3.7	C+	2.3	D	1.0
B+	3.3	C	2.0	E	0.0
B	3.0	C–	1.7		

In addition to the "E" grade (failure), the following grades do not receive quality points: "P" (pass), "I" (incomplete), "W" (withdrawn), "WP" (withdrawn passing), and "WF" (withdrawn failing).

The quality point average (QPA) for a semester is determined by totaling the quality points earned in all courses and dividing that number by the number of credits attempted. At the end of each semester the semester QPA is computed, as well as the cumulative QPA representing the student's academic record to date at the College. If a student repeats a course, only the higher of the two grades is computed in the cumulative QPA.

In order to graduate, a student must have earned a 2.0 cumulative QPA and must also have attained a minimum 2.0 in the major.

Requirements for the Degrees of Bachelor of Arts and Bachelor of Science:

Foundation: All students are required to complete the following foundation:

1. English composition: All students will complete two three-credit courses, ordinarily during the freshman year, unless the Department of Languages and Literature grants an exemption.

2. Basic mathematics: All students will complete one three-credit course, ordinarily during the freshman year, unless the Department of Mathematics grants an exemption.

3. Developmental reading: Freshmen whose admission tests indicate a need for augmented reading skills will complete one three-credit course.

4. Physical education: All students will complete, prior to graduation, either three one-credit activity courses or one three-credit health or physical education course. (Veterans are exempt from this requirement.)

5. Constitutions: All students will complete, prior to graduation, a course in which the constitutions of both the United States and Massachusetts are studied (Massachusetts General Laws, Chapter 73, Section 2A). Courses which satisfy this requirement include HI 111 and 112, U.S. History I and II; HI/PO 218 and 219, U.S. Constitutional History I and II; PO 102, Constitution: U.S. and Massachusetts; and PO 210, American Government.

Distribution: To familiarize students with the content and methodology of the subject areas included in a liberal education, the College requires a specified number of credits in the humanities, the social sciences, the fine arts, and the natural sciences and mathematics. Students may select from a broad spectrum of courses in each of these areas. These requirements may be met in any year of the undergraduate program, but it is advisable to complete them insofar as possible during the first two years.

Group I: Humanities. Students will complete **twelve** credits chosen from the disciplines of English, philosophy, history, foreign languages, and media.

Group II: Social sciences. Students will complete **twelve** credits from the disciplines of economics, education, geography, political science, psychology, sociology, and urban studies.

Group III: Fine arts. Students will complete **nine** credits from the disciplines of art, music, theatre, and photography.

Group IV: Natural sciences and mathematics. Students will complete **twelve** credits from the disciplines of biology, chemistry, geology and physical geography, natural science and physics, and mathematics. At least one of the courses must be a laboratory course awarding three or more credits.

In satisfying the forty-five-credit distribution requirement the following restrictions must be observed:

1. No course from within a student's major may be used to satisfy any distribution requirement. Students with a double major, however, may apply six credits from the second major toward satisfaction of a distribution requirement.

2. No course used to satisfy a foundation requirement may be used to satisfy a distribution requirement.

3. No student may apply more than six credits in any given discipline within a group toward the satisfaction of a distribution requirement.

Major: Before the start of the junior year each student will declare a major in the field of primary intellectual or professional interest. The department chair then assigns a permanent faculty advisor from that subject area to assist the student in constructing a comprehensive program of study. The major at Worcester State College requires the completion of at least thirty credits and may not exceed forty-eight credits. A student may elect to pursue a double major, in which case an advisor from each major field will be assigned.

A department may establish standards for admission of enrolled students into major and minor programs. These standards are not based on any QPA. They may be based on grades earned in prerequisite courses, demonstration of special knowledge and skills through tests, portfolios, interviews, and other relevant criteria. The departments must employ standards approved by the All

College Committee, the chief governing body of the College. Once approved, they are published in the catalog. (See Section 6, "Departments and Programs.") A minimum QPA at variance with college policy may not be used as a standard for retention as a major or minor student within a department.

Minor: Although a minor is not required, a student may declare a minor of from eighteen to twenty-four hours in another discipline.

Undergraduate Major and Minor Programs

All of the following programs are offered during the day; those marked by an asterisk are also offered in the evening through the Program of Continuing Education.

Discipline	Major	Minor	Sponsoring Department
Art*		x	Media, Arts and Philosophy
Biology	x	x	Natural and Earth Sciences
Business Administration*	x	x	Business Administration and Economics
Chemical Engineering + (Freshman and Sophomore years)			Natural and Earth Sciences
Chemistry	x	x	Natural and Earth Sciences
Civil Engineering + (Freshman and Sophomore years)			Mathematics and Computer Science
Coaching		x	Health Sciences
Communication Disorders	x	x	Communication Disorders
Computer Science*	x	x	Mathematics and Computer Science
Early Childhood Education	x		Education and Human Resources
Economics*	x	x	Business Administration and Economics
Elementary Education	x		Education and Human Resources
English*	x	x	Languages and Literature
Foreign Languages	x		Languages and Literature
French	x	x	Languages and Literature
Geography	x	x	Natural and Earth Sciences
Health Science*	x	x	Health Sciences
History*	x	x	History and Political Science
Mathematics*	x	x	Mathematics and Computer Science
Mechanical Engineering + (Freshman and Sophomore years)			Natural and Earth Sciences
Media	x	x	Media, Arts and Philosophy
Music		x	Media, Arts and Philosophy
Natural Science*	x	x	Natural and Earth Sciences
Nursing*	x		Nursing
Occupational Therapy* (approval pending)	x		Health Sciences
Philosophy		x	Media, Arts and Philosophy

Discipline	Major	Minor	Sponsoring Department
Physical Education		x	Health Sciences
Physics	x	x	Natural and Earth Sciences
Political Science		x	History and Political Science
Psychology*	x	x	Social and Behavioral Sciences
Secondary Education		x	Education and Human Resources
Sociology	x	x	Social and Behavioral Sciences
Spanish	x	x	Languages and Literature
Sports Medicine		x	Health Sciences
Theatre		x	Media, Arts and Philosophy
Urban Studies*	x	x	Education and Human Resources

The following interdisciplinary concentrations are also available:

Criminal Justice*	Social and Behavioral Sciences; Education and Human Resources
Gerontology	Education and Human Resources
Middle East Studies	History and Political Science
Nuclear Medicine Technology	Natural and Earth Sciences

+ A Transfer Program (See p.72)

For information about the specific requirements of a particular major or minor program, the student should consult Section 6 of this catalog.

Electives: Having met the general requirements and those of the major (and minor, if applicable), the student may elect other courses without restriction to complete the 128 credits necessary for graduation. Since the purpose of elective courses is to encourage exploration in diverse fields of knowledge, however, the student is urged to take advantage of this opportunity to broaden and deepen his or her intellectual development.

Choice of Degree: Students may receive either a bachelor of arts or bachelor of science degree while majoring in any subject except elementary education (see "Bachelor of Science in Education" below). Provided its programs remain consistent with the general requirements, any department is free to specify requirements in its major and ancillary fields to meet either or both degree programs. The degree is determined by totaling the elective credits in the humanities and sciences, respectively. If a majority fall within the humanities, the student receives a B.A.; if a majority fall within the sciences, a B.S. Subject areas are classified as follows:

Humanities: art, English, foreign languages, history, media, music, theatre, philosophy.

Sciences: biology, business administration, chemistry, communication disorders, computer science, economics, education, geography, health, mathematics, natural science, nursing, occupational therapy, physical education, physics, political science, psychology, sociology, urban studies.

Requirements for the Bachelor of Science in Education Degree

Foundation and Distribution: Each student is required to complete the foundation and distribution requirements as described above, p. 26.

Major: Students preparing to teach at the level of early childhood or elementary education must complete the professional education requirements specified in Section 6 of this catalog.

Minor: Every elementary education major must select a minimum of eighteen credits in an academic field exclusive of any used to satisfy the distribution requirement.

Electives: Beyond those courses necessary to satisfy the College's general requirements and those of the B.S. in Education program, the student may elect other courses without restriction to complete the 128 credits required for graduation.

Academic Advising

Academic advising is an integral part of the educational process at the College. During the registration process and throughout their careers at Worcester State College, students have access to the counsel of a faculty advisor. Once a student declares a major, a permanent faculty advisor from the appropriate subject area is assigned. Whenever possible the assignment is based upon a mutual interest of the student and faculty member. If at any time it becomes desirable to change a student's advisor, the appropriate action may be initiated by either the student or the advisor through the department chair and the associate dean.

Students who have not yet chosen a major are assigned an advisor in the Academic Advising Center. Students enrolled through the Program of Continuing Education are assigned academic advisors through that office. Students seeking immediate academic information are urged to visit the appropriate office.

The faculty advisor explains general and departmental requirements and guides the student in designing a course of study appropriate to personal and vocational goals. The advisor can supply information about opportunities for graduate study and employment in the field of the major. Because it is the advisor's responsibility to monitor the fullfillment of college requirements and to promote the student's own best interests, he or she must approve all course selections before registration. The advising system works best, however, when students consult their advisors not only during the necessary pre-registration and registration periods but frequently throughout the academic year as well. Students should feel free to confer with advisors during posted office hours. In this way a relaxed and amicable advising relationship can develop.

Enhanced Learning Opportunities

The following learning opportunities include those sponsored or administered by the College as well as programs in which it participates.

Credit by Examination: In addition to the Advanced Placement examinations administered by the College Entrance Examination Board through the high schools, several other opportunities to challenge subject areas for credit are available.

1. College Level Examination Program (CLEP): These standardized examinations offered on campus through the Educational Testing Service confer college credit in two categories: general examinations, which include English, humanities, mathematics, social sciences, and natural sciences; and examinations in specific subjects. Further information and applications are available through the Personal Development/Counseling Center.

2. Departmental challenge examinations: Many departments at the College offer students the chance to request and complete department-made examinations for credit. Consult the appropriate department chair.

3. National League for Nursing examinations (NLN): The NLN examinations are administered to candidates for the upper division program in nursing. Consult the chair, Nursing Department, for further informaiton.

4. American Chemical Society: Students may challenge Chemistry for the Allied Health Professions by contacting the Chemistry Department, New York Board of Regents. In some cases, credit can be awarded for these examinations.

Independent Study: Most departments at the College offer independent study programs, whose purpose is to provide opportunities for students of demonstrated interest and ability to pursue a field of special interest not covered in regular course offerings. Normally a student interested in an independent study project must select a professor willing and able to direct such a project and, with the latter's assistance, prepare a written contract outlining a study plan for presentation to the department for approval in advance of the semester during which the project is to be accomplished. Once a study plan is approved, the student meets periodically with the professor and prepares a substantial independent project. Departments and professors within the various disciplines should be consulted for more specific details.

Internships and Professional Experiences: An internship is a form of experiential learning that permits a student to convert theory into action. An internship may be undertaken with or without the expectation of academic credit. If credit is to be granted, however, the internship must be monitored and evaluated by the appropriate College department and a grade awarded at its completion. The internship can be constructed according to any of a number of models:

1. Professional training: A student serves as an apprentice carrying out assigned tasks under the supervision of a professional in a field such as education, nursing, communication disorders, or social work in order to gain and use the knowledge requisite to the profession.

2. Work experience: Under the sponsorship of a faculty member, a student integrates classroom experience with business, governmental, or service experience in the community.

3. Field research: Undertaking an individual or group investigation in business, government, or community, a student applies the principles and

concepts of an academic discipline under the supervision of a faculty member.

4. Career exploration: A student is placed in a supervised position in order to develop job skills and analyze career possibilities.

5. Socio-political action: Under faculty sponsorship a student is directly engaged in working for social change either through community organization, an action research project, or work with existing organizations seeking to bring about societal change.

6. Service learning: Under faculty supervision a student is encouraged to integrate his or her educational growth with a task that meets demonstrated human needs.

Because the student must be involved actively in the development of an internship placement—as by developing a resume, preparing necessary correspondence, and being interviewed—it is desirable that the student contact the faculty sponsor in the semester prior to the proposed internship. The internship contract sets forth the responsibilities of each party so that each understands his or her specific role in the educational field experience. Each program is designed to accommodate and articulate the personal goals of the student, the academic goals of the department, and the needs of the participating off-campus organization.

Information about available internships is regularly relayed to, and publicized in, appropriate academic departments.

Contract Learning Program: This program enables juniors and seniors to obtain academic credit for non-classroom experiences, which must, however, be learning experiences for the student and related to an academic discipline. A contract learning experience allows the student to apply theory to actual working situations and to gain more information about a field or career. Examples of experiences for which students may receive credit include counseling, newspaper work, environmental engineering, musuem work, municipal government study, photography, business management, accounting, and early childhood care. The experience may be in connection with a job, volunteer work, or a special project, and it does not have to be related to a student's major. It must be done, however, in conjunction with a business or organization (hereafter referred to as an "outside agency"). A faculty member of the student's choice (hereafter the "faculty sponsor") and the faculty sponsor's department must approve the project.

The student enters into a contract agreement with an outside agency, faculty sponsor, and department to participate in a proposed learning experience for a specified number of credits. The faculty sponsor, after consulting at the end of the semester with the student's immediate supervisor in the outside agency, evaluates the student's achievement on the basis of the terms of the contract. Upon successful completion of the contract, the student is granted the specified credits. No grade is given, but the credits are applied in lieu of elective credits to the total required for graduation. Credits earned through contract learning may not be substituted for specific course requirements.

Any combination of contract credits up to a maximum of twelve may be earned through contract learning. The amount of time involved depends on the

nature of the experience and the number of credits to be earned. Contract learning forms are available from the Office of the Undergraduate Dean.

Cooperative Education: A program of cooperative education, which will place juniors and seniors in full-time salaried positions within certain state and federal agencies or private industries, is currently under development. The cooperative educational program is an integral part of the baccalaureate degree at Worcester State College. Additional information may be obtained from the Office of the Undergraduate Dean.

Summer School: Students who wish to accelerate the completion of requirements for graduation, those who wish to carry reduced programs of study during the academic year, and those who have failed or withdrawn from courses find the summer program under the auspices of the Division of Graduate and Continuing Education especially convenient. Further information can be found in Section 5, p. 49.

Engineering Science Program: In cooperation with the University of Lowell, the College offers a transfer program for students interested in obtaining a bachelor's degree in chemical, civil, or mechanical engineering. Students completing the first two years of the program at Worcester State College with a quality point average of 3.0 or above will be guaranteed admission to the University of Lowell as juniors in the Chemical, Civil, or Mechanical Engineering Programs. The requirements of the program can be found in Section 6, p. 72.

Pre-Legal Program: A program of preparation for law school is available through the Department of History and Political Science.

Pre-Medical, Pre-Dental, Pre-Veterinary Program: The College offers a program for students interested in preparing for medical, dental or veterinary studies. Nearly all medical and dental schools require one year each of the following, with laboratory: general chemistry, organic chemistry, biology, and physics; in addition many schools require two years of a modern foreign language, one year of English (including composition), and mathematics through calculus. Regardless of major, the student is advised to select CH 120 and 121, General Chemistry I and II; BI 151, General Botany; and BI 152, General Zoology during the freshman year.

A student who is interested in medicine, dentistry, veterinary medicine, optometry, podiatry, or osteopathy should consult both the major advisor and a member of the College Pre-Medical and Pre-Dental Advisory Committee (Dr. Carol Chauvin, Dr. Alan Cooper, and Dr. Estelle Zoll, of the Department of Natural and Earth Sciences).

Worcester Consortium for Higher Education: Ten central Massachusetts colleges, along with a number of other Worcester area organizations, form the Worcester Consortium for Higher Education. In addition to cultural activities, interdisciplinary programs, and other opportunities, the Consortium provides a cross-registration service whereby full-time day students of member colleges may register at no additional cost for one course per semester at another campus. A Consortium shuttle bus provides transportation among campuses throughout the day. Admission into Consortium classes is on a space-available basis. Cross-registration information is available from the College Registrar.

Members of the Consortium, in addition to Worcester State College, are Anna Maria College, Assumption College, Becker Junior College, Central New England College, Clark University, College of the Holy Cross, Quinsigamond Community College, University of Massachusetts Medical School, and Worcester Polytechnic Institute. Among other organizations who participate with the Consortium to enrich local college curricula are the American Antiquarian Society, Worcester Craft Center, The International Center, Old Sturbridge Village, radio station WICN, Worcester Art Museum, Worcester Foundation for Experimental Biology, Worcester Historical Society, Worcester Horticultural Society, and Worcester Science Center.

College Academic Program Sharing (CAPS): A student enrolled at any of the nine Massachusetts State Colleges may enroll for up to thirty credits at any other state college without going through formal registration procedures. Credits are automatically transferred to Worcester State College, and the student pays no additional tuition or fees. For further information consult the Registrar.

New England Regional Student Program: The College participates in a regional cooperative program administered by the New England Board of Higher Education. This program, the New England Regional Student Program, offers qualified residents the benefits of in-state tuition and admission privileges in certain programs at any New England state university, college, two-year college, or technical institute. The purpose of the program is to expand higher educational opportunities for New England residents by making available on an equal basis those programs not commonly offered at every institution.

Information about the program can be obtained from the Admissions Office at the College, from any guidance counselor, or from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111.

American Antiquarian Society Seminar: Each year the American Antiquarian Society and five Worcester colleges—Assumption College, Clark University, College of the Holy Cross, Worcester Polytechnic Institute, and Worcester State College—sponsor a research seminar at the Society library. The seminar is conducted by a scholar familiar with the Society's extensive early American history collection, and the seminar topic is related to his or her field of research.

Normally two students are chosen from each of the five colleges to participate. The seminar topic and research methods combine several disciplines, and students from a wide variety of majors have participated in this unusual undergraduate opportunity. Further information is available from Professor Robert McGraw (Department of History and Political Science).

Study Abroad: Students who wish to undertake a semester or a year of study at an overseas university are encouraged to do so. Information about approved programs is available in the Office of the Undergraduate Dean.

Reserve Officer Training Corps (ROTC)

Air Force: Worcester State College students may participate in, and receive the benefits of, the four- or two-year Air Force ROTC programs

conducted at the College of the Holy Cross where the AFROTC offices are located. The AFROTC programs, which are voluntary and open to all students, lead to a commission as a second lieutenant in the U. S. Air Force.

The academic program consists of a one-hour, non-credit general military course each semester of the first year; a one-hour, one-credit general military course each semester of the second year; and a three-hour, four-credit professional officer course each semester of the third and fourth years. The courses cover Air Force organization and history the first two years, and management, leadership, American defense policy and military law during the final two years.

Each student is also provided with field training, which is completed during the summer between the second and third years. Students attending field training receive travel pay and are paid while in attendance at summer camp. Students who choose to participate in the last two years of AFROTC only must attend field training for six weeks; students who have participated during the first two years of AFROTC attend for four weeks.

Students not already receiving an AFROTC scholarship may compete for scholarships that range in duration from two to three and one-half years. Scholarships cover all tuition costs, fees, and books. In addition, a monthly tax-free subsistence allowance of $100 is paid to all scholarship students, and to all students in their last two years of AFROTC.

The AFROTC program requires United States citizenship, good moral character, and sound physical condition. Students interested in AFROTC should write to the Professor of Aerospace Studies, AFROTC Detachment No. 340, College of the Holy Cross, Worcester, MA 01610, or call (617) 793-3343.

Army: Army Reserve Officer Training, available to all Worcester State College students, is offered by Worcester Polytechnic Institute. Physically qualified American citizens who complete the entire four-year program will be commissioned in the United States Army Reserve. Exceptionally well-qualified cadets may be commissioned in the Regular Army.

Four variations of ROTC are available to the student who desires to participate:

1. The traditional four-year program during which the student takes military science courses two semesters per academic year and attends one advanced summer camp between the third and fourth years.

2. The two-year program designed especially for transfer students from non-ROTC colleges. In this case, students attend a basic summer camp prior to their third year and then continue through their last two years as any other four-year student.

3. The third variation consists of a compressed program for students who feel that they can complete academic studies in three years. The recommended compression is to take both the first- and second-year military science subjects in one year, but other arrangements can be made. The courses themselves are those of the four-year program.

4. The last variation includes modular training in the military or personal

skills which replaces part or all of the classroom academics offered in the first two years. This type of compression can be arranged for both first- and second-year students.

All students enrolled in the last two years of the four-year program receive a tax-free stipend of $2000. In addition, Worcester State College students may apply for Army ROTC scholarships which cover all tuition and fees. Enrollment in ROTC incurs a military obligation after the first two years. Students entering the advanced course (usually at the start of the third year) may incur a three-year active duty commitment as an officer in the U. S. Army or an obligation to attend ninety days Active Duty for Training. Consult the Military Science Department, Worcester Polytechnic Institute, Worcester, MA 01609.

Navy: Courses leading to a commission in the United States Navy or Naval Reserve are available at the College of the Holy Cross by means of cross-enrollment through the Worcester Consortium for Higher Education. While majors in technical programs are most desirable, various non-technical disciplines are permissible. There are two-year and four-year programs requiring the completion of one naval science course and one two-hour laboratory session per semester. Summer training sessions provide practical experience and an opportunity for travel.

Commissions in the United States Marine Corps or Marine Corps Reserve are also available as an option within the naval science program. Navy and Marine candidates follow identical paths for the first two years of the program; within the Marine option Marine Corps courses are substituted for the naval science courses in the junior and senior years.

Scholarships for periods of two, three, and four years which pay the full costs of tuition, fees, textbooks, and a subsistence allowance of $100 per month are available. No military obligation is incurred prior to the beginning of the junior year. Consult the Professor of Naval Science, NROTC Unit, College of the Holy Cross, Worcester, MA 01610.

Academic Policies and Procedures

Regulations governing undergraduate studies are published in **Academic Policies and Procedures,** available in the Undergraduate Dean's Office. This handbook includes information about attendance, adding and dropping courses, withdrawals and leaves of absence, pass/fail option, academic standing including honors and probation, and other relevant policies. Students are expected to familiarize themselves with these regulations to insure that they maintain good academic standing and make satisfactory progress in their studies.

4. The Graduate Program

The Division of Graduate and Continuing Education conducts a graduate program both evenings and summers; it confers master's degrees and certificates of advanced graduate study. Graduate students ordinarily enroll on a part-time basis.

The primary aim of the graduate program is to prepare students who are not only competent in their major fields but also aware of their professional responsibilities. Another major goal is to foster faculty and student research. The Dean of Graduate and Continuing Education and his staff coordinate graduate instruction and, together with the faculty of participating departments, maintain uniform standards for graduate degrees and certificates.

GENERAL ADMISSION REQUIREMENTS

Eligibility

Students seeking admission to a graduate degree program must:

1. Hold a bachelor's degree from an accredited institution (although

college seniors may be admitted conditionally). Applicants to a C.A.G.S. program must hold an appropriate master's degree—ordinarily one in an area within the proposed field of study—from an accredited institution.

2. Have attained a quality point average of 2.75 or above, and

3. Meet the personal, scholastic, professional, and other standards for graduate study, including qualifying examinations, as established by the College or by specific departments.

The Application Process

Applicants to the graduate program must submit the following materials to the Division of Graduate and Continuing Education:

1. A completed application for graduate study. This form can be obtained from the Division of Graduate and Continuing Education.

2. An official transcript—i.e., one bearing the seal of the college and sent directly by the registrar to the Dean of Graduate and Continuing Education—from each college and graduate school attended. Graduates of Worcester State College should request the Registrar to send transcripts to the Division. For applicants who have enrolled in the College's Program of Continuing Education transcripts will already be available in the Division office.

3. The results of the appropriate aptitude test of the Graduate Record Examination or the Miller Analogies Test, to be sent directly by the Educational Testing Service.* (This requirement is waived for applicants who have earned a graduate degree at an accredited institution prior to requesting admission.) For two categories of applicants, other tests are required:

   a. Applicants for a Master of Arts program must submit a score on the appropriate advanced test of the Graduate Record Examination.

   b. Applicants from countries in which English is not the language of instruction must submit the results of the Educational Testing Service's Test of English as a Foreign Language (TOEFL). Ordinarily only students with TOEFL scores of 500 or better will be considered for admission.

4. Two letters of recommendation. Recommendation forms are available in the Division office.

5. Evidence of completion of applicable departmental requirements as specified in Section 6, "Departments and Programs," of this catalog.

6. An interview with a graduate admissions advisor of the Division of Graduate and Continuing Education.

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* Since up to six weeks may elapse between the test date and the receipt of scores, applicants should take the examination well in advance of the application deadline. The Graduate Record Examination is administered at the College six times each year. The Miller Analogies Test is offered at the College by appointment only. Applicants may call the Division office for information about these examinations and arrangements for completing them.

The following schedule indicates the date by which all application materials must be submitted, as well as the month during which the Dean, after reviewing the recommendation of the appropriate academic department, normally notifies the applicant by mail of the action taken:

Semester for which applying	Deadline for submission	Notification by College
Fall	prior to April 15	May 15
Spring	prior to October 2	October 30
Summer	prior to March 2	March 30

All application documents become the property of the Division of Graduate and Continuing Education and cannot be returned. Ordinarily, applications received after a deadline will be considered for action the following semester.

TUITION AND FEES

All tuition and fees are payable on the date of registration and must be paid by bank check, money order, personal check, or credit card (Master Charge or Visa).

Tuition

Tuition is $45 per credit for Massachusetts residents, $52 per credit for non-residents. Auditors, whether resident or non-resident, pay $38 per credit. The following students are exempt from the payment of tuition:

1. Citizens sixty years of age and over may attend tuition-free any courses for which a sufficient number of paying students are registered and for which seating is available.

2. World War II and Korean War veterans are tuition-exempt, as are Vietnam veterans whose home of record during the conflict was Massachusetts and whose Veterans' Administration benefits have been exhausted. Unless previously certified as tuition-exempt, veterans must complete a Veteran's Verification Form at the Veterans' Affairs Office on campus.

Fees

All students are obliged to pay the following non-refundable semester fees, where applicable:

Registration	$10
Late registration	$10
Change of registration	$ 2
Library	$10
Student Center (Fall & Spring Semesters)	$10
Student Center (Summer Sessions I & II)	$ 5

Parking	$ 2
Commencement (degree candidates)	$15
Placement (degree candidates)	$ 5
Transcript (per copy)	$ 1

Refund Policy

Refunds of tuition are based on the number of scheduled class meetings (not the number of meetings attended), and are prorated accordingly:

Withdrawal prior to first class meeting	100%
Withdrawal prior to second class meeting	90%
Withdrawal prior to third class meeting	50%
Withdrawal after third class meeting	No refund

Withdrawals are permitted prior to the tenth class meeting of a semester.

FINANCIAL AID

General information concerning financial aid may be found in Section 3 of this catalog, p. 21. Inquiries regarding eligibility should be directed to the Financial Aid Office.

GRADUATE PROGRAMS

The current graduate programs, together with the names of coordinators responsible for advising students, are as follows:

Program	Sponsoring Department	Advisor-Coordinator
Master of Arts		
Biology	Natural and Earth Sciences	Graham
Master of Science		
Biology	Natural and Earth Sciences	Graham
Speech Pathology/ Audiology	Communication Disorders	Rezen
Master of Education		
Adult Education	Education and Human Resources	Kightlinger
Biology	Natural and Earth Sciences	Graham
Chemistry	Natural and Earth Sciences	Cooper
Community Education	Education and Human Resources	F. Mastersor
Computer Science	Mathematics and Computer Science	Mulcahy
Counselor Training	Education and Human Resources	Farrey

Program	Sponsoring Department	Advisor-Coordinator
Early Childhood Education	Education and Human Resources	Meegan
Elementary Education	Education and Human Resources	Harris
English	Languages and Literature	Gibbs
Generic Consulting Teacher for Children with Mild Special Needs	Education and Human Resources	Cummings
Health Education	Health Sciences	Desrosiers
History	History and Political Science	Burke
Language Arts	Education and Human Resources	E. Shea
Leadership and Educational Administration	Education and Human Resources	Fraumeni
Mathematics	Mathematics and Computer Science	F. Masterson
Natural Science	Natural and Earth Sciences	Chapman
Reading	Education and Human Resources	Fraumeni
Secondary Education	Education and Human Resources	Osborne
Spanish	Languages and Literature	Alcala
Urban Education	Education and Human Resources	Quint
Master of Applied Mathematics	Mathematics and Computer Science	Schoen
Master of Human Service Management	Education and Human Resources	Langlois
School Principal Certificate Program	Education and Human Resources	F. Masterson
Licensure Program Certification for the Generic Special Teacher of Children with Mild Special Needs	Education and Human Resources	Cummings Desrosiers
Master of Education and Certificate of Advanced Graduate Study, School Psychology	Social and Behavioral Sciences/ Education and Human Resources	Guarini
Certificate of Advanced Graduate Study	Education and Human Resources	Farrey
Counselor Training		
Curriculum and Instruction	Education and Human Resources	N. Johnson
Educational Administration and Leadership	Education and Human Resources	F. Masterson
Generic Special Needs	Education and Human Resources	Cummings Desrosiers
Secondary Education	Education and Human Resources	Osborne

GRADUATE DEGREE REQUIREMENTS

In addition to the matriculation regulations and general requirements for master's degrees and certificates of advanced graduate study found below, prospective students should consult Section 6 of this catalog under the appropriate academic department for more detailed information concerning the requirements of specific programs.

Matriculation

In order to become a candidate for a degree, a student must formally apply for matriculation and be accepted into a specific program. Admission to candidacy is contingent upon the attainment of the baccalaureate degree. Non-matriculated students are advised to apply for matriculation at least by the time of completion of their first two graduate courses.

An applicant accepted as a degree candidate receives confirmation of this decision and materials pertaining to the completion of degree requirements. Each matriculated student is assigned an advisor in the appropriate discipline and develops a program of individual study that is not subject to any subsequent changes in degree requirements. In some instances students may be admitted to candidacy on a provisional basis.

All requirements of the graduate program must be completed within six years of admission to the program. Candidates eligible for graduation within a given academic year must signify their intention by completing and submitting an Intent-to-Graduate form no later than March 15. Students who complete degree requirements during the fall or summer should contact the graduate office by March 15 if they intend to participate in the May commencement.

General Requirements for the Master's Degree

Residence Requirements and Academic Standards: All candidates for the master's degree must complete a minimum of thirty-three credits, at least half of which must be earned in exclusively graduate-level courses (designated as 9-000 courses). Only credits for which students have earned a grade of "B" or higher within a six-year period prior to application are transferable from other graduate institutions. A maximum of twelve such graduate credits may be accepted from another Massachusetts state college, a maximum of six from any other accredited institution. Acceptance of transfer credits is the responsibility of the Dean of Graduate and Continuing Education and the appropriate departmental program coordinator in conjunction with the Graduate Education Council. In all instances a minimum of twenty-one credits must be earned at Worcester State College.

The grading system for graduate education employs the letter grades A, A–, B+, B, C+, C, E (failure), W (withdrawn), and I (incomplete). A minimum average of "B" is required for the degree. Two grades of "C" or lower necessitate a program review by the department chair or program coordinator and the

graduate dean. Twenty-seven credit hours of approved course work must earn "B" or higher. Any student receiving a grade of "E" will be dismissed from the program of study. If a student is unable to fulfill the requirements of a course through justifiable extenuating circumstances such as extended illness, an instructor may issue a temporary grade of "I," and permit an extension of eight weeks into the next semester, at which point a student who has not satisfactorily completed the course requirements will receive a grade of "E."

The Dean of Graduate and Continuing Education reserves the right to review periodically the academic performance of all graduate students.

Independent Study: A number of opportunities for independent study exist in the graduate program, but no more than six credits in independent study may be applied to the satisfaction of degree requirements.

Comprehensive Examination: To receive a Master of Arts, Master of Science, or Master of Education degree, a candidate is required to pass an oral and/or written comprehensive examination in the field of concentration. A student who fails the comprehensive examination is permitted one re-examination, which must be completed by the end of the succeeding academic year. Failure on the re-examination results in dismissal from the program. In place of a comprehensive examination the student may elect to complete and defend a thesis in those programs for which such an option is designated.

Course Requirements for the Master of Education Degree

Candidates for the degree of Master of Education must complete the following education foundation courses for a total of nine credits: ED9-960, Research and Evaluation; ED9-970, Advanced Philosophical Foundations of Education; and ED9-980, Advanced Psychological Foundations of Education. Fifteen to eighteen credits are earned in the student's field of concentration and six to nine credits in approved elective courses.

General Requirements for the Certificate of Advanced Graduate Study (C.A.G.S.)

The minimum number of credits for the C.A.G.S. is thirty, all of which must be exclusively graduate-level (9-000) courses and all of which must be earned at Worcester State College. Six credits in 9-000 level courses which were earned at the College prior to admission to the program and which are deemed applicable may be transferred to the C.A.G.S. program. (Any further transferral of credits requires approval by the department chair or coordinator and the Dean.) Within the first semester of candidacy, the student must meet with the program coordinator to plan a program of study. The C.A.G.S. candidate must maintain a minimum scholastic average of "B" in the program; any student receiving a grade lower than "B" is placed on provisional status and is liable to dismissal from the program by decision of the Graduate Education Council.

ACADEMIC REGULATIONS AND PROCEDURES

Attendance

Because each class meeting constitutes a substantial portion of the work in an evening or summer course, students are expected to attend all scheduled class meetings. If absent for any valid reason, the student should inform the instructor and arrange to make up classwork and assignments.

Cancellation of Courses

The Dean of the Division of Graduate and Continuing Education reserves the right to cancel any course which does not secure sufficient enrollment or for any other reason deemed to be in the best interest of the College. Students who have enrolled in a cancelled course may either transfer into another course (on a space-available basis) without the imposition of a course change fee or receive a full refund of tuition and fees.

Student Withdrawal from Courses

Official notice of withdrawal from a course must be made on a form available at the Division of Graduate and Continuing Education office. The official date of withdrawal is that on which the completed form is received by the office. The deadline for withdrawal from a course is the tenth class meeting. Students with extenuating circumstances must secure the approval of the Dean to withdraw from a course after the deadline. A grade of "W" will be recorded in each case of a withdrawal from a course.

Failure to attend class meetings does **not** constitute withdrawal from a course, and the student who merely ceases attending will receive the grade of "E" (failure).

Transcripts and Grade Reports

Official transcripts of courses taken in the Division of Graduate and Continuing Education are issued only upon the written request of the student concerned and will reflect the student's cumulative academic record. No request for a partial transcript will be honored. The student must request the transcript on a form available in the Division office and submit the fee of $1 per copy. There is no charge for transcripts sent to the Registrar of Worcester State College. Requests normally take forty-eight hours to process. Transcripts including the final grades of a summer session or semester are ordinarily available four weeks after its close.

Grade reports are mailed to students as soon as they are processed. Neither grade reports nor transcripts will be issued to students with bills outstanding.

SUMMER SESSION PROGRAM

See Section 5, p. 49.

5. The Program of Continuing Education

The Division of Graduate and Continuing Education administers its Program of Continuing Education during the late afternoon, evening, and Saturday morning hours throughout the academic year and both days and evenings during the summer. Most evening courses meet once a week for approximately three hours (twice a week during the summer sessions). Thus those who are employed or otherwise engaged during the day may pursue their education on a part-time basis without interruption of other activities. Part-time students are advised, however, to attempt no more than two courses per semester.

The educational opportunities provided by the Division fall into three general categories: undergraduate and graduate degree programs (the latter described in the preceding section of this catalog), courses taken for non-degree credit, and courses leading toward a professional certificate.

ADMISSION

Non-Degree Study

Undergraduate courses (designated as 7-000 courses) are open to all students who hold a high school diploma or its equivalent. They include many of the undergraduate courses listed in Section 7 of this catalog with a "7" prefixed to the course number. The Division publishes its offerings six weeks in

advance of the start of each semester. Prospective students need only register at the appropriate time and pay their tuition and all applicable fees. A student may enroll in any number of courses without matriculating in a degree program. The College, however, is under no obligation to accept such courses toward a degree program later.

Baccalaureate Degree Programs

A student may pursue a bachelor's degree part time through the Division of Graduate and Continuing Education. Prior to admission the applicant must successfully complete, or transfer from an accredited institution, four courses of a "C" average or better. Once accepted as a degree candidate, the student is assigned an evening advisor who will help plan the program of study and monitor academic progress. Evening degree students share the rights and privileges of all Worcester State College students.

Certificate Programs

The Division offers a number of professional certificate programs as listed below. Usually applicants will have completed some college study, although some programs are designed to introduce the adult learner to career-oriented areas of study. Prospective students can obtain information on the application requirements of certificate programs at the Division office.

Certificate Program	**Sponsoring Academic Department**
Accounting	Business Administration and Economics
Data Processing	Mathematics and Computer Science
Energy Studies	Natural and Earth Sciences
Instructional Communication and Technology	Media, Arts and Philosophy
Management and Supervision	Business Administration and Economics
Nuclear Medicine Technology	Natural and Earth Sciences
Public Administration	Business Administration and Economics
Small Business Management	Business Administration and Economics
Training and Development/ Human Resource Development	Education and Human Resources

TUITION AND FEES

All tuition and fees are payable on the date of registration and must be paid by bank check, money order, personal check, or credit card (Master Charge or Visa).

Tuition

Tuition is $45 per credit for Massachusetts residents, $52 per credit for non-residents. Auditors, whether resident or non-resident, pay $38 per credit.

The following students are exempt from the payment of tuition:

1. Citizens sixty years of age and over may attend tuition-free any courses for which a sufficient number of paying students are registered and for which seating is available.

2. World War II and Korean War veterans are tuition-exempt, as are Vietnam veterans whose home of record during the conflict was Massachusetts and whose Veterans' Administration benefits have been exhausted. Unless previously certified as tuition-exempt, veterans must complete a Veteran's Verification Form at the Veterans' Affairs Office on campus.

Fees

All students are obliged to pay the following non-refundable semester fees, where applicable:

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Withdrawal prior to second class meeting	90%
Withdrawal prior to third class meeting	50%
Withdrawal after third class meeting	No refund

Withdrawals are permitted prior to the tenth class meeting of a semester.

FINANCIAL AID

General information concerning financial aid may be found in Section 3 of this catalog, p. 21. Inquiries regarding eligibility should be directed to the Financial Aid office.

REQUIREMENTS FOR THE BACCALAUREATE DEGREE

Degree students enrolled through the Division of Graduate and Continuing Education must meet academic requirements of the College. Credit courses offered in the evening are taught by fully qualified faculty and are identical to day courses in quality and rigor. Because of limited course offerings in some academic areas, however, it may be necessary for evening students to enroll in day classes to fulfill some degree requirements. The evening degree candidate should study carefully "Academic Programs" in Section 3 of this catalog as well as the description of the program in which he or she is interested under the appropriate department in Section 6, and then consult an undergraduate evening advisor.

The following undergraduate major programs are available through the Program of Continuing Education:

Discipline	**Sponsoring Academic Department**
Business Administration	Business Administration and Economics
Computer Science	Mathematics and Computer Science
Economics	Business Administration and Economics
English	Languages and Literature
Health Science	Health Sciences
History	History and Political Science
Mathematics	Mathematics and Computer Science
Natural Science	Natural and Earth Sciences
Nursing (for RN's)	Nursing
Occupational Therapy (approval pending)	Health Sciences
Psychology	Social and Behavioral Sciences
Sociology	Social and Behavioral Sciences
Urban Studies	Education and Human Resources

OTHER PROGRAMS

The Division of Graduate and Continuing Education works with community groups and agencies, as well as with the College's academic departments, to offer quality workshops and seminars for community people and groups. Such efforts are intended to complement the academic credit offerings of the school by meeting specific informational or skill needs through a different format.

Through non-credit workshops and seminars the College has been able to respond to the learning needs of professional women, members of the transportation industry, people in need of career counseling, supervisory

personnel in the health professions, small businessmen, speech pathologists and audiologists, and many others.

Life Plus Learning

The College has designed the Life Plus program to identify, measure, document, and evaluate significant experiential learning related to the curriculum. Part-time students who have at least two years of experience in the area for which credit is sought and who have completed a minimum of fifteen credits through the Division are eligible. Work, community volunteer activities, and hobbies are examples of experiences which may qualify for credit.

Once a student has identified such a prior learning experience, a faculty mentor will assist in documenting it. The student assembles a portfolio, which is submitted to a committee composed of members of the appropriate academic department for determination of credit.

Off-Campus Extension Programs

The Division of Graduate and Continuing Education is committed to providing school systems, businesses, and other professional groups with on-site programs designed to meet their specific needs. The programs include credit courses, workshops, institutes, non-credit courses, and other activities.

Summer Sessions Program

The Division of Graduate and Continuing Education offers a variety of courses, workshops, and institutes to assist in the professional growth and certification of undergraduate, graduate, and continuing education students. As there are two six-week summer sessions, the first beginning in late May and the second in early July, it is possible to complete from one to four courses in the summer. There are also several two- and three-week intensive or workshop courses. Courses range from lower-division undergraduate to upper-level graduate offerings and may be applied toward undergraduate and graduate degree requirements at the College as well as toward other credential requirements. The summer offerings include many unique and innovative programs for teachers and other professionals.

The summer session schedule is available from the Division in late April.

Summer housing is available, in the Chandler Village apartment complex. The apartments are fully furnished except for cooking and eating equipment, bed and bath linen, and desk lamps. All furniture and major kitchen appliances are furnished. For further information, contact the Office of Housing.

ACADEMIC REGULATIONS AND PROCEDURES

See Section 4, p. 44.

6. Departments and Programs of the College

Business Administration and Economics

Business Administration

Economics

Chair: Juralewicz

Business Administration

Professor: Bornfriend, Downey, Farrey, Hartwig, Juralewicz, Masterson, Stefanini
Associate Professor: Joyal
Assistant Professor: McEachern, Moore
Instructor: Swanson

The business adminstration program enables participants to acquire competencies necessary to manage the human, financial, and technological resources of organizations. The major offers concentrations in business administration, public administration, and health administration. Within the business administration concentration, a general business program is available as well as specializations in accounting/finance, human resource development, and production/operations management.

Admission Requirements: Application to the department after completion of the following prerequisite courses:

MA 115 College Algebra and Trigonometry
MA 250 Introduction to Statistics I
MA 302 Calculus I for Management
One of the following computer science courses:
CS 111 Programming Languages I
CS 231 Business Programming I
CS 280 Discrete Simulation and Modeling Techniques
EN 253 Business Communication

The criteria for acceptance are: performance in pre-management courses ("C" average), experience in management or demonstration of special knowledge, and unusually high motivation to suceed in management.

Requirements for a Major in Business Administration: 48 credits
Common Management Core: 36 credits
BA 110 Fundamentals of Accounting I
BA 111 Fundamentals of Accounting II
BA 200 Fundamentals of Management and Organizational Behavior
BA 300 Problem Solving in Organizations
BA 305 Organizational Dynamics
BA 310 Managerial Accounting
BA 315 Quantitative Analysis and Information Systems
BA 361 Public Management
or
BA 450 Health Systems in America
BA 403 Financial Management I
BA 405 Marketing I
BA 480 Current Challenges to Management
BA 490 Administrative Strategy Formulation and Implementation
Other upper-level business administration courses: 12 credits

Requirements for a Major in Business Administration, Concentration in General Business: The Common Management Core together with four additional courses chosen with the assistance of the advisor.

Requirements for a Major in Business Administration, Concentration in Accounting/Finance: The Common Management Core together with four courses in the field of accounting and finance chosen with the assistance of the advisor.

Requirements for a Major in Business Administration, Concentration in Human Resource Development: The Common Management Core together with four courses in the field of human resource development chosen with the assistance of the advisor.

Requirements for a Major in Business Administration, Concentration in Production/Operations Management: The Common Management Core together with four courses in the field of production and operations management chosen with the assistance of the advisor.

Requirements for a Major in Business Administration, Concentration in Public Administration: The Common Management Core together with four courses in the field of public administration chosen with the assistance of the advisor.

Requirements for a Major in Business Administration, Concentration in Health Administration: The Common Management Core together with four courses in the field of health administration chosen with the assistance of the advisor.

Requirements for a Minor: Pre-management courses and 24 credits as follows:

BA 110 Fundamentals of Accounting I
BA 111 Fundamentals of Accounting II
BA 200 Fundamentals of Management and Organizational Behavior
BA 300 Problem Solving in Organizations
BA 305 Organizational Dynamics
BA 310 Managerial Accounting
BA 315 Quantitative Analysis and Information Systems
Any 400-level business administration elective

Certificate Programs

Requirements for a Certificate in Management and Supervision:

MG8-200 Principles of Management and Organizational Behavior
MG8-300 Techniques of Problem Solving in Organizations
MG8-306 Organizational and Human Dynamics
MG8-400 Budgetary Management for Administrators
MG8-410 Computer Utilization in Management Settings
Any two courses at the 8-000 level related to the participant's functional job specialty, such as courses in economics, computer science, business administration, media, or adult education

Requirements for a Certificate in Small Business Management

MG8-100 Seminar in Small Business Management
MG8-200 Principles of Management and Organizational Behavior
MG8-400 Budgetary Management for Administrators
MG8-410 Computer Utilization in Management Settings
MG8-420 Developing Financial Management for Small Businesses
Any two of the following:
MG8-425 Industrial Management for Small Business
MG8-420 Marketing for Small Business
MG8-500 Selected Topics in Business Administration

Requirements for a Certificate in Accounting: Students must complete the following prerequisites:

MA 250 Introduction to Statistics I
CS 111 Programming Languages I
BA 110 Fundamentals of Accounting I
BA 111 Fundamentals of Accounting II

The requirements for the certificate *per se* are:

BA 200 Fundamentals of Management and Organizational Behavior

BA 310 Managerial Accounting
BA 370 Intermediate Accounting I
BA 371 Intermediate Accounting II
BA 372 Advanced Accounting I
BA 374 Cost Accounting
BA 375 Federal Income Taxation
BA 376 Auditing

Requirements for a Certificate in Public Administration:

PO 110 American Government
BA 110 Introduction to Accounting I
EN 304 Technical Writing
MA 250 Introduction to Statistics I
BA 361 Public Management
BA 462 Employee Relations in the Public Sector
or
MG8-175 Labor Relations and Collective Bargaining
Any two courses selected from the following:
BA 360 Public Program Analysis
BA 460 Law for Government Administration
BA 464 Government Budgeting Systems
BA 485 Practicum in Public Management

Economics

Professor: Choi, Kelley
Assistant Professor: Trimby

Economics offers a major program for those students who wish to prepare for careers as economists in various governmental agencies, non-profit and industrial organizations, and academic institutions. Since it is frequently necessary to obtain additional training to qualify as a professional economist, the major program is designed to prepare students for such advanced study. *Omicron Delta Epsilon,* the national honor society in economics, is available to outstanding students.

Requirements for a Major: 30 credits

EC 100 Introduction to Macroeconomics
EC 101 Introduction to Microeconomics
EC 200 Macroeconomics
EC 201 Microeconomics
EC 207 Statistics

The remaining 15 or more credits may be chosen from economics electives in accordance with special interests and career objectives.

Requirements for a Minor: 18 credits

EC 100 Introduction to Macroeconomics
EC 101 Introduction to Microeconomics
Any other four economics courses

Communication Disorders

Chair: Cohen

Professor: Cohen, Lysaght
Associate Professor: Rezen
Assistant Professor: McLaughlin, Power

Communication disorders majors receive training in the speech and hearing sciences. With a sound theoretical basis, the student then participates in evaluation, diagnosis, and rehabilitation of children and adults with communication problems. This program emphasizes the blending of theoretical and practical skills through solid academic and clinical training.

Admission Requirements: Students must complete the following, earning a grade of C+ or better before admission to the major:

CD 100 Speech Pathology
CD 105 Phonetics
CD 110 Anatomy and Physiology of Speech and Hearing
CD 115 Normal Development of Speech and Language
CD 200 Introduction to Speech and Hearing Science

Students must demonstrate adequate speech and language patterns. Students must petition the department for admission to the program.

Requirements for a Major: 39 credits

The five courses listed above and
CD 205 Audiology
CD 210 Language Disorders
CD 215 Voice and Articulation Disorders
CD 300 Rehabilitation of the Auditorily Impaired
CD 305 Rhythm Problems and Allied Disorders of Speech
CD 310 Speech/Language Practicum I
CD 400 Speech/Language Practicum II
CD 405 Aural Rehabilitation Practicum

Requirements for a Minor: 18 credits within the department.

Graduate Program

Admission Requirements: General admission requirements and completion of courses in speech pathology, phonetics, anatomy and physiology of speech and hearing, language development, speech and hearing science, audiology, and child development. Students must have a minimum quality point average of 3.0, acceptable speech and language patterns, and adequate Graduate Record Examination or Miller Analogies scores.

Requirements for a Master of Science in Speech Pathology or Audiology with a Concentration in Speech Pathology: Students must complete

CD8-400 Articulation Disorders
CD9-200 Research in Communication Disorders

CD9-225 Language Disorders in Children
or
CD9-235 Language Disorders in Adults
CD9-400 Diagnostic Evaluation: Methods and Procedures
CD9-800 Seminar in Speech Pathology
CD9-900 Clinical Practicum in Speech Pathology
Two audiology courses (6 credits)
MA8-500 Statistical Techniques for Business, Liberal Arts, Nursing, and the Sciences
Four departmental electives (12 credits)

In addition, students must demonstrate competence in a foreign language or in computer science.

Requirements for a Master of Science in Speech Pathology or Audiology with a Concentration in Audiology: Students must complete

CD8-280 Clinical Audiology
CD9-200 Research in Communication Disorders
CD9-260 Aural Rehabilitation
CD9-270 Hearing Aids and Hearing Aid Selection
CD9-850 Seminar in Audiology
CD9-950 Clinical Practicum in Audiology
Two speech pathology courses (6 credits)
MA8-500 Statistical Techniques for Business, Liberal Arts, Nursing, and the Sciences
Four departmental electives (12 credits)

In addition, students must demonstrate competence in a foreign language or in computer science. This concentration is offered only when student enrollment is sufficient.

Education and Human Resources

Chair: Langlois

Education

Urban Studies

Education

Professor: Bunuan, Fraumeni, Harris, Johnson, Meegan, Osborne, Pilon, Quint
Associate Professor: O'Neil, Scanlon
Assistant Professor: Dowling, Geer

The Education and Human Resources Department offers programs leading to teaching certification at various levels. The Early Childhood Program focuses on preparation for professional service in preschool settings and the primary level of elementary schools. The Elementary Program focuses on the preparation of teachers for certification at the elementary level. The Middle School Program and the Secondary Education Program are also available. Students may have two majors by using their academic field and their electives

for their second major. *Kappa Delta Pi,* the national honor society in education, is available to outstanding majors.

Admission Requirements: Letter of application to the chair, interview with the chair or designee, and the completion, by freshman applicants, of a personal data sheet.

Requirements for the Early Childhood Education Program: 46 credits

ED 110 Orientation to Early Childhood Education
ED 210 Creative Experience in the Curriculum for Young Children
ED 211 Curriculum Designs for Young Children
ED 212 Human Interrelationships in Early Childhood Education
ED 310 Early Childhood Education: Methods and Materials Core
ED 311 Field Experience in Early Childhood Eduction
ED 420 Field Experience and Seminar
ED 430 Student Teaching

Requirements for the Elementary Education Program: 48 credits

ED 135 Introduction to Teaching and Learning
ED 235 Pre-Practicum I
ED 240 Pre-Practicum II
ED 300 Educational Psychology
ED 335 Methods and Materials, Block I
ED 336 Methods and Materials, Block II
ED 435 Student Teaching
Two education electives: 6 credits

Requirements for the Middle School and Secondary Education Program: 33 credits

ED 155 Emerging Opportunities for Educators
ED 255 Learning Skills for Adolescents
ED 256 Fundamental Approaches for Teaching Adolescents
ED 257 Individualizing Learning for Adolescents
ED 258 Evaluating Classroom Learning
ED 355 Foundations of Curriculum and Instruction at the Middle and Secondary School
ED 475 Practicum in Teaching
An appropriate course in curriculum methods and media

Requirements for a Secondary Education Minor: 18 credits in secondary education courses.

Graduate Programs

Master of Education, Concentration in Adult Education

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Adult education courses: 15 credits

Electives: 9 credits

An individualized program of study is developed to meet career goals of the applicant.

Adult Education Courses:
- ED8-160 Reading Needs of the Adult Learner
- ED8-225 Workshop: Train the Trainer
- ED8-276 Teaching ESL to Adults
- ED8-280 The Practice of Adult Education
- ED8-292 Workshop in Adult Education
- ED9-200 Programs for the Aging
- ED9-215 Teaching the Illiterate Adult
- ED9-225 Designing, Developing, and Delivering Training Programs
- ED9-250 History and Philosophy of Adult Education
- ED9-255 Directed Study in Adult Education
- ED9-260 Psychology of the Adult Learner
- ED9-270 Program Planning for Adults
- ED9-275 Administration in Adult Education
- ED9-280 Internship in Adult Education

Comprehensive Examination: Each candidate must pass a comprehensive examination in adult education.

Master of Education, Concentration in Community Education

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Area I: 9 credits. The student will select, with the approval of the advisor, three of the following four courses:
- ED8-210 Organizational Patterns of the Community School
- ED8-270 Community Communication and Organization
- ED9-210 The Community School: Its Administration and Supervision
- ED9-220 The Community School: Processes and Problems

Area II: 3 credits. The student will select, with the approval of the advisor, one of the following three courses:
- ED9-290 Special Problems in Community Education

ED9-291 Internship in Community Education
ED9-293 Independent Study in Community Education

Interdisciplinary clusters: 12 credits. Each student will select a cluster appropriate to his or her own needs and interests.

Cluster I: Adult Education
- ED9-200 Programs for the Aging
- ED9-215 Teaching the Illiterate Adult
- ED9-250 The History and Philosophy of Adult Education
- ED9-260 Psychology of the Adult Learner
- ED9-275 Administration in Adult Education

Cluster II: Leadership and Educational Administration
- ED9-100 Foundations of School Administration
- ED9-103 Fundamentals of School Finance
- ED9-105 Public School Administration
- ED9-112 Law for the Administrator
- ED9-172 Grantsmanship for the Teacher and the Administrator

Cluster III: Community Development
- UR 311 Community Politics and Policies
- UR8-371 Leadership in Organizations
- ED8-255 Volunteers in the Community
- SO 270 Social Theory I
- SO 340 Social Psychology

Comprehensive Examination: Each candidate must pass a comprehensive examination in community education.

Master of Education, Concentration in Counselor Training

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Core requirements in counseling: 9 credits
- CT8-200 Group Psychological Testing
- CT8-300 Theories of Counseling
- CT9-800 Practicum in Counseling (6 credits in area of specialization)

Area of specialization: 9 credits from one of the following areas:

Community agency/mental health counseling: The student will select three of the following:
- CT9-100 Psychological Counseling Strategies
- CT9-155 Vocational Development and Occupational Information

CT9-250 Group Counseling I
CT9-251 Group Counseling II
CT9-425 Family and Parent Counseling

School counseling: The student will select three of the following:
CT8-100 Introduction to Pupil Personnel Services
CT9-155 Vocational Development and Occupational Information
CT9-300 Individual Intelligence Appraisal (WAIS-WISC)
CT9-350 Individual Intelligence Appraisal (Binet)
CT9-425 Family and Parent Counseling

Career development counseling: The student will select three of the following:
CT8-250 Theories of Self-Assessment and Life/Work Planning
CT9-150 Vocational Counseling Strategies
CT9-155 Vocational Development and Occupational Information
CT9-925 Seminar: Current Issues and Procedures in Career Counseling

Elective Courses: 6 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in counselor training.

Master of Education, Concentration in Early Childhood Education

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
ED9-960 Research and Evaluation
ED9-970 Advanced Philosophical Foundations of Education
ED9-980 Advanced Psychological Foundations of Education

Other required courses: 15 credits
ED8-320 Curriculum for Early Childhood Education
ED8-330 Methods and Materials in Early Childhood Education
ED9-320 Intellectual Development in Early Childhood Education
ED9-350 Supervision and Administration in Early Childhood Education
ED9-380 Seminar in Early Childhood Education

Elective courses: 9 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in early childhood education.

Master of Education, Concentration in Elementary Education

Admission Requirements: General admission requirements. The candidate must hold a baccalaureate degree from an institution which offers an accredited program in teacher education; the candidate must also hold a teaching certificate in elementary education.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Other required courses: 6 credits
- ED9-410 Theory and Research in the Elementary Curriculum
- ED9-420 Seminar in Current Issues in Elementary Education

Elective courses: 18 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in elementary education.

Master of Education, Generic Consulting Teacher for Children with Mild Special Needs

Admission Requirements: General admission requirements. In addition, all applicants must meet the following special criteria:

1. Massachusetts teaching certificate
2. Two years of employment in the role of the certificate
3. Prerequisite course or equivalent in child growth and development

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Pre-practicum: 21 credits
- ED9-600 Developmental Patterns of Children with Special Needs
- ED9-610 Analysis and Interpretation of Children's Behavior and Learning Environment
- ED9-620 Development and Implementation of an Individualized Educational Plan
- ED9-625 Classroom Management Techniques
- ED9-630 Program Development and Evaluation
- ED9-640 Consulting and Interpersonal Skills
- CD8-115 Speech and Language Development

Practicum: 3 credits
- ED9-650 Practicum for the Generic Consulting Teacher

Comprehensive Examination: Each candidate must pass a comprehensive examination in generic consulting.

Master of Education, Concentration in Language Arts

Requirements for Admission: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Reserach and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Other required courses, to be taken in sequence: 15 credits
- ED9-575 Creative Writing for Pupils in the Elementary School
- ED9-516 Teaching Language and Reading in the Inner City School
- ED9-560 Research in the Teaching of Language Arts and Reading
- ED9-512 Advanced Study in the Teaching of Language Arts and Reading
- ED9-570 Laboratory Practicum in Language Arts in the Elementary School (summers only)

Elective courses: 9 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in language arts.

Master of Education, Concentration in Leadership and Educational Administration

Admission Requirements: General admission requirements

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Other required courses: 15 credits
- ED9-103 Fundamentals of Public School Finance
- ED9-105 Public School Administration
- ED9-112 Law for the Administrator
- ED9-127 Organization and Administration of the Elementary School
  or
- ED9-158 Organization and Administration of the Middle and Secondary School
- ED9-140 Curriculum Development Seminar for Administrators

Elective courses: 9 credits approved by the advisor

Comprehensive Examination: Each candidate must pass a comprehensive examination in leadership and educational administration.

Master of Education, Concentration in Reading

This concentration is designed to prepare personnel for the multiple role of consultant teacher of reading (all levels), following standards established by the Massachusetts Department of Education. Completion of this registered program leads to Massachusetts certification as a consulting teacher of reading.

Admission Requirements: General admission requirements. In addition, each applicant must hold a Massachusetts classroom teaching certificate and have completed one year of employment in the role covered by that certificate.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Other required courses: 30 credits
- ED9-510 Psychology in Teaching Reading
- ED9-515 Linguistics and Language Acquisition for the Reading Teacher
- ED9-520 Diagnosis of Reading Disabilities
- ED9-525 Remediation of Reading Disabilities
- Reading in the Content Areas
- ED8-620 Education of Children with Special Needs
- CT9-300 Individual Intelligence Appraisal (WAIS-WISC)
- or
- CT9-350 Individual Intelligence Appraisal (Binet)
- ED9-535 Literature in the Classroom
- ED9-540 Seminar in the Administration and Supervision of Reading Programs
- ED9-550 Laboratory Practicum in Reading

Comprehensive Examination: Each candidate must pass a comprehensive examination in the teaching of reading.

Master of Education, Concentration in Secondary Education

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Other required courses: at least four of the following: 12 credits
- ED9-710 Current Issues in Education

ED9-740 Team Teaching in the Middle School
ED9-760 Individualizing Instruction in the Secondary School
ED9-820 Evaluation of Classroom Learning
ED9-810 Principles of Curriculum Development
ED9-110 Educational Law
Elective courses: 6-12 credits chosen from the following:
Approved courses in candidate's major content area
ED9-105 Public School Administration
A community education course
An adult education course
Independent study

Comprehensive Examination: Each candidate must pass a comprehensive examination in secondary education.

Master of Education, Concentration in Urban Education

Admission Requirements: General admission requirements.

Requirements of the Program:
Education foundation courses: 9 credits
ED9-960 Research and Evaluation
ED9-970 Advanced Philosophical Foundations of Education
ED9-980 Advanced Psychological Foundations of Education
Other required courses: The candidate will complete concentration courses in the urban dimension the sequence and distribution of which will be established on an individual basis, depending on the background and interests of the candidate.
Elective courses: The candidate will select, with the approval of the advisor, electives which meet individual interests and needs.

Comprehensive Examination: Each candidate must pass a comprehensive examination in urban education.

Licensure Program Certification for the Generic Special Teacher of Children with Mild Special Needs

Admission Requirements: General admission requirements; teaching certificate in elementary or secondary education; two years of full-time teaching experience; master's degree from an accredited institution; completion of PS 210, Child Growth and Development, or its equivalent.

Requirements of the Program: The following courses, except for ED9-625 and CD8-115, which may be taken at any time, must be taken sequentially:
ED9-690 Development Patterns of Children with Special Needs
ED9-610 Analysis and Interpretation of Children's Behavior and Learning Environment

ED9-620 Development and Implementation of an Individualized Educational Plan
ED9-625 Classroom Management Techniques
CD8-115 Speech and Language Development
ED9-630 Program Development and Evaluation
ED9-640 Consulting and Interpersonal Skills
ED9-650 Practicum for the Generic Consulting Teacher (6 credits)

Certification can be obtained only through a college whose generic special program has been audited and approved by the State Bureau of Teacher Preparation, Certification, and Placement.

Master of Education and Certificate of Advanced Graduate Study, Concentration in School Psychology

This 72-credit interdisciplinary program is designed to provide students with the competencies necessary to function as school psychologists in Massachusetts. Students completing the program meet the requirements for certification as school psychologists.

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
ED9-960 Research and Evaluation
ED9-970 Advanced Philosophical Foundations of Education
ED9-980 Advanced Psychological Foundations of Education

Required psychology courses:
ED9-600 Developmental Patterns of Children with Special Needs
ED9-609 Neuropsychological Assessment and School Problems
ED9-610 Analysis and Interpretation of Children's Behavior and Learning Environment
or
CT8-200 Group Psychological Testing
ED9-620 Development and Implementation of an Individualized Educational Plan
ED9-625 Classroom Management Techniques
ED9-640 Consulting and Interpersonal Skills
CT9-250 Group Counseling I
CT9-300 Individual Intelligence Appraisal (WAIS-WISC)
CD8-115 Speech and Language Development
CT9-425 Family and Parent Counseling
CT9-450 Advanced Psychological Testing
or
PS9-150 Psychodiagnostic Techniques
PS8-340 Advanced Abnormal Psychology
PS9-605 Psycho-Educational Prescriptions
PS9-590 Issues in School Psychology

Two electives from an area of normal/pathologic development
PS9-980 Practicum in School Psychology I

PS9-985 Practicum in School Psychology II
Two electives selected from the following:
ED9-520 Diagnosis of Reading Disabilities
ED9-630 Program Development and Evaluation
or
CT9-155 Vocational Development and Occupational Information
CT9-100 Psychological Counseling Strategies
CT9-160 Counseling Students with Special Needs

Comprehensive Examination: Each candidate must pass a comprehensive examination in school psychology.

Certificate of Advanced Graduate Study in Counselor Training

Admission Requirements: General admission requirements.

Candidates without a master's degree in counseling must establish that they have substantial preparation in counseling. The program defines substantial preparation as a minimum of six graduate-level courses in the area of counseling.

Requirements of the Program:

1. Educational foundation (3 credits): courses in the history, philosophy, and psychology of the educational process and/or curriculum and principles of administration.
2. Psychological and social foundation (3 credits): courses in the psychodynamics of human behavior and/or the interactive influence of the personality and the societies in which it develops.
3. Professional skills (12 credits): courses in counseling, appraisal, research, career education, and administration.
4. Supervised professional experience (6 credits): an internship utilizing counseling and appraisal skills under supervision. Candidates who have completed one year of full-time experience as counselor are exempt from the internship requirement but must complete CT9-900, Current Issues Seminar in Guidance and Counseling.
5. Electives (6-9 credits)

Comprehensive Examination: Each candidate must pass a comprehensive examination in counselor training.

Certificate of Advanced Graduate Study in Curriculum and Instruction

Admission Requirements: General admission requirements. In addition, candidates must have earned eighteen credits at the graduate level in the area of curriculum and instruction and have two years of teaching experience.

Requirements of the Program:

Required courses (12 credits):

ED9-810 Principles of Curriculum Development
ED9-815 Theories of Instruction
ED9-825 Analysis of Curriculum Programs
ED9-830 Seminar in Curriculum and Instruction

Research (6 credits): Candidates choose an area of either action or library research with the assistance of the advisor. Research projects are reviewed by the Action Research Committee or coordinator, as appropriate.

Electives (12 credits): Candidates select, with the approval of the advisor, four courses from the following areas: adult education, community education, early childhood education, elementary education, secondary education, special needs, urban education, educational leadership and administration.

Comprehensive Examination: Each candidate must pass a comprehensive examination in curriculum and instruction.

Certificate of Advanced Graduate Study in Educational Administration and Leadership

Admission Requirements: General admission requirements

Requirements of the Program: Each candidate will meet with the coordinator to develop a program which will reflect his or her experiences and career goals. Although there is a minimum of thirty hours of course work, most candidates can expect to be advised to complete more courses (depending on their experience in educational administration). All students must complete ED9-195 and ED9-196, Action Research Seminar I and II. Students will choose their action research committee, composed of three faculty members, which will advise them during their action research effort and conduct the comprehensive examination based on the final project. Two bound copies of each candidate's study must be submitted to the coordinator.

Comprehensive Examination: Each candidate must pass a comprehensive examination in educational administration and leadership.

Certificate of Advanced Graduate Study in Generic Special Needs

The program in generic special needs is designed to meet state certification requirements for a generic consulting teacher of school age children with mild special needs.

Admission Requirements: General admission requirements; a master's degree in education with concentration in special needs, reading, counseling, administration, or another related area; a Massachusetts classroom teaching

certificate; two years of employment in the role covered by that certificate; a course in child growth and development or its equivalent; a graduate course in speech and language or its equivalent.

Requirements of the Program: 30 credits

ED9-960 Research and Evaluation
ED9-600 Developmental Patterns of Children with Special Needs
ED9-610 Analysis and Interpretation of Children's Behavior and Learning Environment
ED9-620 Development and Implementation of an Individualized Educational Plan
ED9-625 Classroom Management Techniques
ED9-630 Program Development and Evaluation
ED9-640 Consulting and Interpersonal Skills
ED9-650 Practicum for the Generic Consulting Teacher (6 credits)
One approved elective in a related area

Comprehensive Examination: Each candidate must pass a comprehensive examination in generic special needs.

Certificate of Advanced Graduate Study in Secondary Education

Admission Requirements: General admission requirements.

Requirements of the Program: A minimum of 30 credits from the following five areas:

1. Education foundations (history, curriculum, philosophy, psychology, statistics)
2. Secondary education (including adult and community education)
3. Non-education courses in the candidate's discipline
4. Courses in research design and methodology
5. A 6-credit research project

Comprehensive Examination: Each candidate must pass a comprehensive examination in secondary education.

Other Programs

Certificate Program for Training and Development of Human Resource Development Practitioners

Admission Requirements: Minimum of 48 previous college credits or documentation of current employment in the field.

Requirements of the Program: All students must complete a minimum of one course in each of the four skill areas of program design and development,

program management, adult learning and adult learners, and instructional skills and group process. The requirements are based on a point system (a 3-credit course confers 15 points) with 75 points required for students with an undergraduate degree and 105 points for students without a degree. Courses include:

ED8-225 Workshop: Train the Trainer
ED8-292 Workshop in Adult Education
ED9-225 Directed Study in Adult Education
ED9-260 Psychology of the Adult Learner
ED9-270 Program Planning for Adults
ED9-275 Administration in Adult Education
ED9-280 Internship in Adult Education

In addition, workshops are available in areas of need such as interpersonal skills; communication; group process; motivation; designing, developing, and delivering training programs; and instructional skills.

School Principal Certificate Program (K-6) (5-9) (9-12)

The school principal certificate program is approved by the Massachusetts Department of Education and enables successful candidates to receive school principal certification in Massachusetts.

Admission Requirements: Candidates must hold a Massachusetts teaching certificate and must have completed three years of employment in the role covered by that certificate. They must complete a pre-practicum consisting of 24 credits in other courses and other experiences on the graduate level as defined by Standards I-V of the Massachusetts Department of Education Certification Standards, and they must complete a half practicum (150 clock hours) within one year or an internship (300 clock hours) within two years, judged successful on the basis of the Standards.

Requirements of the Program:

Phase I. Education foundation requirements: 6 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education

Phase II. Concentration requirements: 15 credits
- ED9-103 Fundamentals of School Finance
- ED9-105 Public School Administration
- ED9-112 Law for the Administrator
- ED9-140 Curriculum Development Seminar for Administrators
- ED9-190 Special Problems in Public School Administration (in area of certification)

Phase III. Certification requirements: 9 credits at the appropriate level:

Level K-6:
- ED9-127 Organization and Administration of the Elementary School
- ED9-185 Practicum in Educational Administration/Leadership

Levels 5-9 and 9-12:
ED9-158 Organization and Administration of the Middle and Secondary School
ED9-185 Practicum in Educational Administration/Leadership

Urban Studies

Professor: Langlois, Powers
Associate Professor: Amory, Power

Urban Studies is a professional program employing both classroom and community experience as part of an intensive educational model involving students and faculty. A multi-disciplinary field, Urban Studies is designed for the student interested in urban-based careers in public management, planning, law, human and health service management, social work, youth services, gerontology, and criminal justice.

Requirements for a Major: 36 credits in courses with numbers between UR 101 and UR 439. Experiential courses in internship and practicum count for degree credit above the required 36 credits in formal classroom courses.

Requirements for a Major in Urban Studies, Concentration in Gerontology: 21 credits
UR 325 Social Casework in the Urban Setting
Two courses offered by participating institutions of the Worcester Consortium for Higher Education
Two courses selected from the following:
UR 201 Analysis of Urban Systems
UR 340 Urban Housing Dilemma
UR 341 Urban Health and Social Service Systems
UR 411 Assigned Readings in Urban Studies
HE 415 Aging, Death, and Suicide Education
NU 440 Nursing in Primary Care
SO 207 Sociology of the Family
SO 210 Medical Sociology
Field experience: 6 credits

Requirements for a Major in Urban Studies, Concentration in Health and Human Services: 18 credits
UR 101 Introduction to Urban Systems
UR 212 American Metropolitan Evolution
UR 213 Human Identity in the Urban Environment
UR 320 Human Needs and Social Services
UR 341 Urban Health and Social Service Systems
UR 401 Research Seminar in Urban Studies

Requirements for a Major in Urban Studies, Concentration in Public Service and Urban Community Planning: 18 credits

UR 101 Introduction to Urban Systems
UR 212 American Metropolitan Evolution
UR 213 Human Identity in the Urban Environment
UR 310 Power, Politics, and Decision-Making in Urban Communities
or
UR 311 Community Politics and Policies
UR 370 Structure and Function of Urban Organizations
UR 401 Research Seminar in Urban Studies

Requirements for a Minor: 18 credits including the following:

UR 101 Introduction to Urban Systems
UR 212 American Metropolitan Evolution
UR 213 Human Identity in the Urban Environment
Any three other UR 300 level courses

Graduate Program

Master of Human Service Management

Admission Requirements: General admission requirements. In addition, applicants will be individually interviewed by the department and selected on the basis of motivation, career goals, and established experience in the human service field.

Requirements of the Program: 36 graduate credits including the following 21-credit core:

HM9-400 Leadership Skills and Social Group Work
HM9-420 Organizational Theory and Effective Intervention
HM9-440 Politics, Public Policy, and the Human Services
HM9-450 Financial Management for Non-Profit Organizations
HM9-460 Seminar in Program Analysis and Evaluation
HM9-480 Advanced Supervision Skills
HM9-490 Strategic Decision-Making and Computer Systems

Any three of the following may be taken as electives, along with such other courses as are approved in advance by the advisor:

HM9-300 Communication for Effective Management
HM9-320 Practices in Community Organization
HM9-910 Unions and the Public Sector
HM9-930 Marketing in Non-Profit Organizations
HM9-950 Accounting and Budgeting for Public Management
HM9-970 Statistical Methods for Management Decisions
HM9-971 Personnel Management and Non-Profit Organizations
HM9-472 Public Law

Each candidate must complete a six credit action research project as follows:

HM9-990 Action Research I
HM9-991 Action Research II

Engineering Science

Chemical Engineering

Civil Engineering

Mechanical Engineering

Students who wish to pursue a bachelor's degree in engineering may complete the first two years of programs in chemical, civil, or mechanical engineering at Worcester State College. The 2+2 Engineering Program provides the engineering student with the appropriate quality point average the opportunity for guaranteed admission as a junior at the University of Lowell.

Students completing the Engineering Science Program will be accepted at the University of Lowell under conditions outlined for each of the engineering options as described below.

Requirements for the Program in Chemical Engineering:

First Year

Fall		*Credits*	*Spring*		*Credits*
EN 101	English Composition I	3	EN 102	English Composition II	3
MA 300	Calculus I	4	MA 301	Calculus II	4
PY 120	Physics I (with laboratory)	4	PY 121	Physics II (with laboratory)	4
CH 120	General Chemistry I (with laboratory)	4	CH 121	General Chemistry II (with laboratory)	4
	Humanities elective	3		Humanities elective	3
		18			18

Second Year

Fall		*Credits*	*Spring*		*Credits*
CH 201	Organic Chemistry I	3	CH 202	Organic Chemistry II	3
CH 203	Organic Chemistry Laboratory I	2	CH 204	Organic Chemistry Laboratory II	2
MA 310	Calculus III	4	EC 101	Introduction to Microeconomics	3
CS 250	Scientific Programming I (FORTRAN)	3	MA 320	Ordinary Differential Equations	3
	Technical elective	3		Technical elective	3
	Physical Education	1		Physical Education	1
		16			15

At University of Lowell (summer) or through the Consortium

25.101	Introduction to Engineering Design and Graphics
10.203	Chemical Engineering Calculations I
10.204	Chemical Engineering Calculations II

10.206 Fluid Mechanics
10.207 Computer Programming for Chemical Engineering

(Course to be taken at the University of Lowell in the junior year in place of humanities elective: 14.217 Statics and Strength of Materials)

Technical electives in the above program may not be substituted for University of Lowell senior level technical electives.

Students completing the above program at Worcester State College with a quality point average of 3.0 or above will be guaranteed admission to the Chemical Engineering Program at the University of Lowell as juniors. Students with a QPA of 2.5 to 2.999 will be admitted to the program on a seats available basis.

Requirements for the Program in Civil Engineering:

First Year

Fall		*Credits*	*Spring*		*Credits*
EN 101	English Composition I	3	EN 102	English Composition II	3
MA 300	Calculus I	4	MA 301	Calculus II	4
PY 120	Physics I (with laboratory)	4	PY 121	Physics II (with laboratory)	4
CH 120	General Chemistry I (with laboratory)	4	CH 121	General Chemistry II (with laboratory)	4
	Humanities elective	3		Humanities elective	3
		18			18

Second Year

Fall		*Credits*	*Spring*		*Credits*
MA 334	Statics	3	MA 381	Mathematical Statistics	3
MA 338	Surveying	3	EN 252	Technical Writing	3
MA 310	Calculus III	4	MA 320	Ordinary Differential Equations	3
CS 250	Scientific Programming I (FORTRAN)	3	EC 100	Introduction to Macroeconomics	3
	Social science elective	3		Social science elective	3
	Physical Education	1		Physical Education	1
		17			16

At University of Lowell (summer) or through the Consortium

14.204 Strength of Materials
25.101 Introduction to Engineering Design and Graphics

(Course to be taken at the University of Lowell in the junior year in place of humanities elective: 14.226 Surveying II)

Students completing the above program at Worcester State College with a quality point average of 3.0 or above will be guaranteed admission to the Civil Engineering Program at the University of Lowell as juniors. Students with a QPA of 2.5 to 2.999 will be admitted to the program on a seats available basis.

Requirements for the Program in Mechanical Engineering:

First Year

Fall		*Credits*	*Spring*		*Credits*
EN 101	English Composition I	3	EN 102	English Composition II	3
MA 300	Calculus I	4	MA 301	Calculus II	4
PY 120	Physics I (with laboratory)	4	PY 121	Physics II (with laboratory)	4
CH 120	General Chemistry I (with laboratory)	4	CH 121	General Chemistry II (with laboratory)	4
	Humanities elective	3		Humanities elective	3
		18			18

Second Year

Fall		*Credits*	*Spring*		*Credits*
MA 334	Statics	3	PY 230	Electricity and Magnetism I	3
EN 252	Technical Writing	3	MA 320	Ordinary Differential Equations	3
MA 310	Calculus III	4	CS 250	Scientific Programming I (FORTRAN)	3
PY 122	Physics III (with laboratory)	4	MA 336	Dynamics	3
PY 210	Mechanics I	4		Physical Education	1
	Physical Education	1			13
		19			

At University of Lowell (summer) or through the Consortium

22.212 Mechanics of Materials II
22.242 Thermodynamics
25.101 Introduction to Engineering Design and Graphics

(Courses to be taken at the University of Lowell in the junior year in place of humanities electives: 16.211, Fundamentals of Electricity; and 22.295, Material Science)

Students completing the above program at Worcester State College with a quality point average of 3.0 or above will be guaranteed admission to the Mechanical Engineering Program at the University of Lowell as juniors. Students with a QPA of 2.5 ot 2.999 will be admitted to the program on a seats available basis.

Health Sciences

Chair: Burke

Health Science

Occupational Therapy

Physical Education

Health Science

Professor: Burke, Read
Associate Professor: Chen, Munson, Semerjian

The Health Science discipline offers instruction leading to the Bachelor of Science degree in health education with concentrations in health counseling, health services, and health education. Each concentration has been designed to enable students to acquire the basic knowledge and skills needed to practice their chosen profession while at the same time obtaining a broad cultural background in the humanities and in the social and natural sciences. An honor society in Health Studies has recently been formed.

Admission Requirements: Students must have completed two or more health courses, complete the prerequisites listed below with an average of "C" or better, submit a formal application, and have a personal interview with a faculty panel. The prerequisites are:

BI 161 and 162 Human Anatomy and Physiology I and II
CH 110 and 111 Introduction to General, Organic, and Biochemistry I and II
MA 250 Introduction to Statistics I
PS 110 and 111 General Psychology I and II
SO 100 Introduction to Sociology

Requirements for a Major: 39 credits. Variations in required and elective courses within each concentration are detailed on Program of Studies forms available from departmental advisors. HE 440, Practicum in Health, is a required part of the program. Students will do field work in such areas as family planning services, crisis centers, hospitals, schools, homes for the aging, etc.

Requirements for a Minor: 18 credits. All students must complete the following:

HE 100 Personal Health
HE 110 Drugs and Society
HE 120 Health and Nutrition
HE 200 Consumer Health

Graduate Program

Master of Education, Concentration in Health Education

The master's program with a concentration in health education is designed to prepare teachers at the elementary, secondary, and post-secondary levels for teaching in health education. If a student enters with preparation equivalent to any of the requirements indicated below, other courses may be selected with the consent of the coordinator of the program.

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Health education concentration courses: 15 credits

Electives: 9 credits (Additional health education courses and other electives from different departments may be selected.)

Additional course requirements will be determined by the coordinator based on the student's previous background.

Comprehensive Examination: Each candidate must pass a comprehensive examination in health education.

Occupational Therapy (Approval pending)

Assistant Professor: Joss

The Occupational Therapy program combines a strong background in the arts, humanities, and natural and social sciences with professional courses in the theory and practice of occupational therapy. It leads to the degree of Bachelor of Science in occupational therapy. This degree and successful completion of six months of post-baccalaureate fieldwork qualifies the student to sit for the national examination required by the American Occupational Therapy Association for registration and licensure as an occupational therapist.

The program has two tracks, Track One for students who have no educational background in occupational therapy and Track Two for students with an associate's degree in occupational therapy.

Admission Requirements: Track One admission requires completion of the following prerequisites with a grade of "C" or better.
- PS 110 and 111 General Psychology I and II
- PS 120 Human Development
- BI 161 and 162 Human Anatomy and Physiology I and II
- BI 171 Basic Kinesiology
- OT 100 Introduction to Occupational Therapy
- OT 200 and 201 Occupational Therapy Intervention Techniques: Media I and II

Track Two admission requires an associate's degree in occupational therapy and successful completion of the American Occupational Therapy Association certification examination for occupational therapy assistants. In addition, applicants to either track must submit a formal application to the program and have a personal interview with Occupational Therapy program faculty.

Requirements for a Major: Track One requirements:

Ancillary Requirements: 10 credits

MA 250 Introduction to Statistics
BI 315 Neuroanatomy and Physiology
CS 111 Programming Languages I

Upper division occupational therapy requirements: 41 credits

OT 303 Human Performance, Occupation, and the Activity Process
OT 305 Health and Illness: Physiological
OT 310 Occupational Therapy Methods with Developmental Problems I
OT 311 Practicum in Developmental Problems I
OT 315 Health and Illness: Psychosocial
OT 320 Occupational Therapy Methods with Developmental Problems II
OT 321 Practicum in Developmental Problems II
OT 330 Communication and Group Process in Occupational Therapy
OT 405 Methods of Occupational Therapy Practice with Physiological Diagnoses
OT 406 Practicum in Occupational Therapy with Physiological Diagnoses
OT 410 Organization and Administration of Occupational Therapy Services
OT 412 Research Methods in Occupational Therapy
OT 415 Methods of Occupational Therapy Practice with Psychosocial Diagnoses
OT 416 Practicum in Occupational Therapy Methods with Psychosocial Diagnoses
OT 420 Methods of Facilitating Therapeutic Adaptation
OT 425 Seminar in Occupational Therapy

Requirements for a Major: Track Two requirements:

Ancillary Requirements: 13 credits

BI 171 Kinesiology
MA 250 Introduction to Statistics I
BI 315 Neuroanatomy and Physiology
CS 111 Programming Languages I

Upper division occupational therapy requirements: 33 credits

OT 303 Human Performance, Occupation, and the Activity Process
OT 305 Health and Illness: Physiological
OT 312 Occupational Therapy Methods with Developmental Problems I (Accelerated)
OT 315 Health and Illness: Psychosocial
OT 325 Occupational Therapy Methods with Developmental Problems II (Accelerated)
OT 330 Communication and Group Process in Occupational Therapy

OT 407	Occupational Therapy Methods with Physiological Diagnoses (Accelerated)
OT 410	Organization and Administration of Occupational Therapy Services
OT 412	Research Methods in Occupational Therapy
OT 417	Occupational Therapy Methods with Psychosocial Diagnoses (Accelerated)
OT 420	Methods of Facilitating Therapeutic Adaptation
OT 425	Seminar in Occupational Therapy

In addition to the specific Track One and Track Two requirements for graduation, eligibility for the American Occupational Therapy Association certification examination requires successful completion of Level II Fieldwork, First and Second Placement (OT 450 and 451). No student will be allowed to begin Level II Fieldwork until all required occupational therapy courses have been completed with a grade of "C" or better.

Students should be prepared to accept and assume the responsibility for transportation to Practicum (Level I) and Level II Fieldwork placements in geographic areas outside the city of Worcester.

Physical Education

Associate Professor: Dyson, Mockler, Nugent
Assistant Professor: Demars, Duquette, Girouard

The physical education program offers students participation in individual and team activities designed to develop skill, fitness, and knowledge to meet immediate and life-long needs and interests. There is also a sports medicine program.

Requirements for a Minor: 18 credits in physical education and/or coaching courses.

History and Political Science

Chair: Kane

Professor: Edmunds, Mitchell, Saliba, Shea, Spector, Yuan
Associate Professor: Cohen, Kane, McGraw, Minasian, Twiss
Assistant Professor: Delaney, Goldsmith

The purpose of the discipline is to provide the student with the extensive course offerings to enable him or her to cope with a complex and ever-shrinking world. The study of history and political science also provides the student with a broad background for a wide variety of professional occupational opportunities. Within the history major exist programs in American Studies, Pre-Law, Honors Curriculum, and Middle East Studies. *Phi Alpha Theta,* the national history honor society, is available to distinguished history majors even if they are not in the honors curriculum.

Requirements for a Major: 36 credits including
HI 101 and HI 102 Western Civilization I and II
HI 111 and HI 112 U.S. History I and II
U.S. history electives: 6 credits
European history electives: 6 credits
Non-U.S., non-European electives: 6 credits
Other electives in history: 6 credits

Requirements for a Major in History—Honors Curriculum: This program is open to qualified majors (juniors and seniors) who display outstanding abilities in historical studies in their first two years and are interested in pursuing a deeper and broader knowledge of the subject.

Major in History—American Studies: Juniors and seniors have the opportunity for independent study and off-campus internships. Students will be able to work as interns in historic museums, historic restorations, historic libraries, archives, or in any one of a great variety of agencies in state, county, and local government.

Major in History—Pre-Law: As special preparation for law school, a minimum of 12 credits in constitutional history and a minimum of 15 credits in political science are required. In addition to the core program, the student may select the remainder of the required hours for the degree from a wide variety of subjects.

Requirements for a Minor in History: 18 credits
HI 101 and 102 Western Civilization I and II
HI 111 and 112 U.S. History I and II
Electives: 6 credits

Requirements for a Minor in Political Science: 18 credits
PO 101 Principles of Political Science
Electives: 15 credits

Requirements for a Minor in Middle East Studies: 18 credits
GE 360 Geography of the Middle East
HI 261 Middle East History
HI 314 Twentieth Century Middle East History
9 credits recommended by advisor

Concentration in Criminal Justice: The Department of History and Political Science, in conjunction with the disciplines of psychology, sociology, and urban studies, offers an upper-division concentration in Criminal Justice.

Graduate Program

Master of Education, Concentration in History

Admission Requirements: General admission requirements together with 18 credits in history including the following courses or their equivalents:
HI 101 and 102 Western Civilization I and II

HI 111 and 112 U.S. History I and II

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

HI9-100 Study and Writing of History
U.S. history elective: 3 credits
European history elective: 3 credits
Non-U.S., non-European history elective: 3 credits
Additional history electives: 6 credits in any of the above three areas
Additional courses in education: 6 credits with the approval of the student's guidance committee

Comprehensive Examination: Each candidate must pass a comprehensive examination in history.

Languages and Literature

Chair: Roberts

English

Foreign Languages

English

Professor: Ayer, Gibbs, Goldwyn, Herx, Johnson, Roberts, Todd, Tyrell, Walker
Associate Professor: Gordon
Assistant Professor: Crowley, Eddy, Ellis, Sullivan, Wasilko
Instructor: Grandone

The principal objectives of the English program are to help students to communicate clearly, logically, and effectively; to use research methods intelligently; and to analyze, interpret, and enjoy literature. The program also seeks to familiarize students with the classics of world literature, emphasizing the major authors, works, and literary movements which distinguish English and American literature. *Lambda Iota Tau,* national honor society in literature, is available to outstanding junior and senior English majors and minors.

Requirements for a Major: 36 credits in English (exclusive of EN 100, English for Communication Skills; EN 101 and 102, English Composition I and II), which must include the following:

EN 110 **or** 111 Survey of American Literature I **or** II
EN 120 **and** 121 Survey of English Literature I **and** II
EN 320 Shakespeare I
Electives: 24 credits, selected with the assistance of the advisor

Requirements for a Major in English with a Concentration in Writing: 18 credits in writing courses (exclusive of EN 101 and 102, English Composition I and II) in addition to the four courses required of all majors. The remaining 6 credits are free electives, selected with the assistance of the advisor.

Requirements for a Minor: 18 credits including
EN 110 or 111 Survey of American Literature I or II
EN 120 and 121 Survey of English Literature I and II
Electives: 9 credits

Graduate Program

The program offers a variety of graduate courses designed to respond to a wide spectrum of personal, community, academic, and professional needs. The concentration program provides training for careers in teaching, research, writing, editing, journalism, government service, and related fields.

Master of Education, Concentration in English

Admission Requirements: General admission requirements together with 18 credits in English at an accredited institution of higher education.

Requirements of the Program:
Education foundation courses: 9 credits
ED9-960 Research and Evaluation
ED9-970 Advanced Philosophical Foundations of Education
ED9-980 Advanced Psychological Foundations of Education
English concentration: 18 credits, selected with the approval of the advisor
Two additional courses in a related area: 6 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in English.

Foreign Languages

Professor: Alcala, Celona, Shea
Associate Professor: De Benedictis, Kittredge

The major in foreign languages is designed for the student whose interests and career plans have an international or multi-ethnic focus. The student who majors or minors in a language can expect to develop speaking, reading, and writing fluency. Majors will study in depth the culture, history, and literature of the people who use the language.

Requirements for a Major in Foreign Languages: 36 credits including
300- or 400-level courses in the first language: 15 credits
300- or 400-level courses in the second language: 6 credits
Other courses in the discipline, including FL courses, subject to the advisor's approval: 15 credits

Requirements for a Major in French: 30 credits in French including
200-level courses: 6 credits maximum
FR320-329, advanced French language courses: 9 credits minimum
FR330-339, French civilization courses: 3 credits minimum
FR340-359, French literature courses: 9 credits minimum
Courses in a second foreign language: 6 credits minimum

Requirements for a Minor in French: 18 credits including
FR100-299, beginning and intermediate courses: 12 credits maximum
FR300-499, advanced courses: 6 credits minimum

Requirements for a Major in Spanish: 30 credits in Spanish including
200-level courses: 6 credits maximum (optional)
SP320-329, advanced Spanish language courses: 9 credits minimum
SP330-339, Spanish civilization courses: 3 credits minimum
SP340-359, Spanish literature courses: 9 credits minimum
Courses in a second foreign language: 6 credits minimum

Requirements for a Minor in Spanish: 18 credits including
SP100-299, beginning and intermediate courses: 12 credits maximum
SP300-499, advanced courses: 6 credits minimum

Graduate Program

Master of Education, Concentration in Spanish

Admission Requirements: General admission requirements. In addition, every candidate must have an adequate command of spoken and written Spanish.

Requirements of the Program:
Education foundation courses: 9 credits
ED9-960 Research and Evaluation
ED9-970 Advanced Philosophical Foundations of Education
ED9-980 Advanced Psychological Foundations of Education
Courses in literature or socio-cultural studies, selected from the following: 18 credits
SP8-320 Spanish Summer Institute
SP8-321 The Hispanic World Today
SP8-322 Contemporary Spain
SP8-323 History and Culture of Puerto Rico
SP8-324 The Latin Americans in U.S.A.
SP8-325 Travel Study Course
SP9-326 *Seminario Intercultural*
SP9-330 Spanish Novel of the Nineteenth and Twentieth Centuries
SP9-331 Latin American Novel of the Nineteenth and Twentieth Centuries
SP9-332 Hispanic Theater

SP9-333 Contemporary Spanish Novel
SP9-334 Contemporary Latin American Novel
SP9-335 Literature of Spanish Golden Age
Electives in methods of teaching, selected from the following: 6 credits
ED8-810 Language and Language Teaching
ED8-830 The Understanding and Teaching of Culture
ED8-840 ESL Methodology
ED8-850 Foundation of Bilingual-Bicultural Education
ED8-860 Bilingual-Bicultural Curriculum
ED8-870 Methods and Materials in the Bilingual Program

Comprehensive Examination: Each candidate must pass a comprehensive examination in Spanish or complete an additional course in literature or socio-cultural studies.

Mathematics and Computer Science

Chair: Schoen

Professor: Campo, Glassbrenner, Hayes, Hill, Hilton, Perry, Redding, Schoen, Zax
Associate Professor: Avedikian, Johnson
Assistant Professor: Kotzen, Mulcahy, Ogozalek

The department prepares its students for advanced study and research as well as for careers in actuarial science, business and industry, government, and teaching. The graduate program offers various options in specific areas of mathematics and computer science which increase the level of knowledge and experience of the students.

Admission Requirements: Computer Science Major: Students must have completed the freshman year and the following prerequisites with a grade of "C" or better:

CS 111 Programming Languages I
MA 300 and MA 301 Calculus I and II
PY 260 and PY 261 Analog and Digital Electronics I and II

Admission Requirements: Mathematics Major, Concentration in Computer Science: Good SAT scores; adequate high school background with at least average grades in mathematics and computer science courses; completion of the following prerequisites:

CS 111 and CS 212 Programming Languages I and II

Admission Requirements: Other Mathematics Majors: Good SAT scores; adequate high school background with at least average grades in mathematics and computer science courses.

Requirements for a Major in Computer Science: 39 credits
CS 230 PASCAL Language Programming

CS 250 Scientific Programming I
CS 251 Scientific Programming II
or
CS 330 Advanced PASCAL
CS 310 Computer Organization and Assembly Language Programming
CS 315 Digital Logic Circuits
CS 350 Computer Architecture and Operating Systems
CS 361 Data Structures
CS 370 Compiler Design
CS 410 Digital Computer Organization
CS 430 Analysis of Algorithms
CS 440 Computability and Finite Automata
MA 220 Discrete Mathematics I
MA 321 Discrete Mathematics II

Requirements for a Major in Mathematics, Concentration in Actuarial Science: 33 credits

MA 300 Calculus I
MA 301 Calculus II
MA 310 Calculus III
MA 220 Discrete Mathematics I
MA 370 Introduction to Actuarial Science
MA 375 Life Contingency
MA 380 Probability
MA 381 Mathematical Statistics
MA 440 Introduction to Numerical Analysis
3 credits in electives (excluding MA 100, MA 130, and MA 131)

Requirements for a Major in Mathematics, Concentration in Business and Finance: 33 credits

MA 300 Calculus I
MA 301 Calculus II
MA 310 Calculus III
MA 225 Business Mathematics
MA 250 Introduction to Statistics I
MA 251 Introduction to Statistics II
MA 325 Introduction to Quantitative Methods
MA 140 Problem Solving
MA 220 Discrete Mathematics I
5 credits chosen from the following:
MA 305 Abstract Algebra
MA 320 Ordinary Differential Equations
MA 330 Linear Algebra
MA 340 Modern Geometry I
MA 341 Modern Geometry II
MA 350 History of Mathematics
MA 360 Number Theory
MA 370 Introduction to Actuarial Science

MA 375 Life Contingency
MA 380 Probability
MA 381 Mathematical Statistics
MA 401 Advanced Calculus I
MA 411 Advanced Calculus II
MA 425 Introduction to Partial Differential Equations
MA 430 Topology
MA 440 Introduction to Numerical Analysis
MA 441 Numerical Methods
MA 450 Complex Variables

Requirements for a Major in Mathematics, Concentration in Computer Science:
48 credits

MA 300 Calculus I
MA 220 Discrete Mathematics I
CS 231 Business Programming I
or
CS 250 Scientific Programming I
CS 310 Computer Organization and
Assembly Language Programming
or
CS 320 Macro, Mini Computers
MA 301 Calculus II
MA 310 Calculus III
18 credits chosen from the following:

CS 130 PASCAL Language Programming
CS 210 Data Communications Systems
CS 232 Business Programming II
CS 233 Information Retrieval and File Management
CS 234 Business Programming III
CS 280 Discrete Simulation and Modeling Techniques
CS 361 Data Structures
CS 375 Business Systems Analysis and Design
CS 380 Systems Programming
CS 450 Management and Information Systems
CS 251 Scientific Programming II
CS 315 Digital Logic Circuits
CS 350 Computer Architecture and Operating Systems
CS 370 Compiler Design
CS 410 Digital Computer Organization
CS 430 Analysis of Algorithms
CS 440 Computability and Finite Automata
MA 325 Introduction to Quantitative Methods
MA 441 Numerical Methods
MA/CS 498 Internship
MA/CS 499 Independent Study
PY 250 Instrumentation and Electrical Measurement
PY 260 Analog and Digital Electronics I
PY 261 Analog and Digital Electronics II

9 credits chosen from the following:

- MA 305 Abstract Algebra
- MA 320 Ordinary Differential Equations
- MA 321 Discrete Mathematics II
- MA 325 Introduction to Quantitative Methods
- MA 330 Linear Algebra
- MA 340 Modern Geometry I
- MA 341 Modern Geometry II
- MA 350 History of Mathematics
- MA 360 Number Theory
- MA 370 Introduction to Actuarial Science
- MA 375 Life Contingency
- MA 380 Probability
- MA 381 Mathematical Statistics
- MA 401 Ring Theory
- MA 410 Advanced Calculus I
- MA 411 Advanced Calculus II
- MA 415 Introduction to Partial Differential Equations
- MA 430 Topology
- MA 440 Introduction to Numerical Analysis
- MA 441 Numerical Methods
- MA 450 Complex Variables

Requirements for a Major in Mathematics, Concentration in Liberal Arts: 33 credits

MA 300 and MA 301 Calculus I and II
MA 220 Discrete Mathematics I
MA 310 Calculus III
9 credits of mathematical electives (excluding MA 100, 115, 130, and 131)
9 credits from the following:

- MA 305 Abstract Algebra
- MA 320 Ordinary Differential Equations
- MA 321 Discrete Mathematics II
- MA 325 Introduction to Quantitative Methods
- MA 330 Linear Algebra
- MA 340 and MA 341 Modern Geometry I and II
- MA 350 History of Mathematics
- MA 360 Number Theory
- MA 370 Introduction to Actuarial Science
- MA 375 Life Contingency
- MA 380 Probability
- MA 381 Mathematical Statistics
- MA 401 Ring Theory
- MA 410 and MA 411 Advanced Calculus I and II
- MA 415 Introduction to Partial Differential Equations
- MA 430 Topology
- MA 440 Introduction to Numerical Analysis
- MA 441 Numerical Methods
- MA 450 Complex Variables

Requirements for a Major in Mathematics, Concentration in Professional Preparation for Engineering and Architecture: 33 credits

MA 300, MA 301, and MA 310 Calculus I, II, and III
MA 220 Discrete Mathematics I
MA 320 Ordinary Differential Equations
MA 321 Discrete Mathematics II
MA 334 Statics
MA 336 Dynamics
MA 338 Surveying
6 credits chosen from the following:
- MA 305 Abstract Algebra
- MA 325 Introduction to Quantitative Methods
- MA 330 Linear Algebra
- MA 340 and MA 341 Modern Geometry I and II
- MA 350 History of Mathematics
- MA 360 Number Theory
- MA 370 Introduction to Actuarial Science
- MA 375 Life Contingency
- MA 380 Probability
- MA 381 Mathematical Statistics
- MA 401 Ring Theory
- MA 410 and MA 411 Advanced Calculus I and II
- MA 415 Introduction to Partial Differential Equations
- MA 430 Topology
- MA 440 Introduction to Numerical Analysis
- MA 441 Numerical Methods
- MA 450 Complex Variables

Requirements for a Major in Mathematics, Minor in Secondary Education: 33 credits

MA 300, MA 301, and MA 310 Calculus I, II, and III
MA 220 Discrete Mathematics I
MA 110 College Algebra
MA 120 College Trigonometry
MA 170 Analytical Geometry
MA 140 Problem Solving
8 credits chosen from the following:
- MA 305 Abstract Algebra
- MA 320 Ordinary Differential Equations
- MA 321 Discrete Mathematics II
- MA 325 Introduction to Quantitative Methods
- MA 330 Linear Algebra
- MA 340 and MA 341 Modern Geometry I and II
- MA 350 History of Mathematics
- MA 360 Number Theory
- MA 370 Introduction to Actuarial Science
- MA 375 Life Contingency
- MA 380 Probability
- MA 381 Mathematical Statistics

MA 401 Ring Theory
MA 410 and MA 411 Advanced Calculus I and II
MA 415 Introduction to Partial Differential Equations
MA 430 Topology
MA 440 Introduction to Numerical Analysis
MA 441 Numerical Methods
MA 450 Complex Variables

Requirements for a Minor in Computer Science: 18 credits in computer science which may include the following:

MA 220 Discrete Mathematics I
MA 440 Introduction to Numerical Analysis
MA/CS498 Internship

but may not include CS 101, Computers in Society.

Requirements for a Minor in Mathematics: 18 credits

MA 220 Discrete Mathematics I
MA 300 and MA 301 Calculus I and II
7 credits in mathematics electives (excluding MA 100)

Graduate Program

Admission Requirements: General admission requirements and the full calculus sequence and discrete mathematics are prerequisites for all students pursuing graduate programs in Applied Mathematics or a Concentration in Mathematics. In addition, at least two introductory courses in computer science are required for Applied Mathematics.

Requirements for a Master of Applied Mathematics, Concentration in Computer Science:

Six courses chosen from the following:

CS8-275 Fundamentals of Systems Analysis
CS8-278 RPG Programming
CS9-100 Numerical Methods Using Computers
CS9-220 Advanced FORTRAN
CS9-275 Advanced COBOL
CS9-290 Higher Level Programming in PASCAL
CS9-291 Higher Level Programming in APL

Two courses chosen from the following:

MA8-380 Probability
MA8-390 Statistics
MA8-568 Special Problems in Mathematics
MA8-600 Ordinary Differential Equations
MA9-301 Linear Algebra
MA9-375 Life Contingencies
MA9-395 Multiple Regression

Requirements for a Master of Applied Mathematics, Concentration in Applied Mathematics:

Six courses chosen from the following:

- MA8-380 Probability
- MA8-390 Statistics
- MA8-568 Special Problems in Mathematics
- MA8-600 Ordinary Differential Equations
- MA9-301 Linear Algebra
- MA9-370 Theory of Interest
- MA9-375 Life Contingencies
- MA9-395 Multiple Regression

Two courses chosen from the following:

- CS8-275 Fundamentals of Systems Analysis
- CS8-278 RPG Programming
- CS9-100 Numerical Methods Using Computers
- CS9-220 Advanced FORTRAN
- CS9-275 Advanced COBOL
- CS9-280 Assembly Language: IBM 360/370
- CS9-290 HIgher Level Programming in PASCAL
- CS9-291 Higher Level Programming in APL

Requirements for a Master of Education, Concentration in Computer Science

Education foundation courses: 9 credits

- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Five courses from the following, selected with the advisor's approval: 15 credits

- CS8-200 Computer Programming with FORTRAN IV
- CS9-220 Advanced FORTRAN
- CS8-250 Computer Programming with COBOL
- CS9-275 Advanced COBOL
- CS8-300 Using the Statistical Package for the Social Sciences
- CS9-300 Applied Information Systems
- CS9-100 Numerical Methods Using Computers
- CS9-990 Seminar in Computer Science

Three additional courses in education, selected with the advisor's approval: 9 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in computer science.

Requirements for a Master of Education, Concentration in Mathematics

Education foundation courses: 9 credits

- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Three of the following courses: 9 credits
- MA9-100 Analysis I
- MA9-301 Linear Algebra
- MA9-400 Abstract Algebra
- MA9-500 Complex Variables

Two of the following courses, selected with the advisor's approval: 6 credits
- MA8-200 Topics in Geometry
- MA8-380 Probability
- MA8-390 Statistics
- MA8-400 Number Theory
- MA8-568 Special Problems in Mathematics
- MA8-600 Ordinary Differential Equations
- MA8-700 History of Mathematics
- MA9-101 Analysis II
- MA9-301 Linear Algebra

Three additional courses in education, selected with the advisor's approval: 9 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in mathematics.

Certificate Program

Requirements for a Certificate in Data Processing: Students must complete the following:
- CS8-230 Programming in PASCAL
- CS8-250 COBOL Language Programming
- CS8-278 RPG Programming
- CS8-420 Management of Data Processing
- CS8-275 Fundamentals of Systems Analysis
- CS8-400 Data File Structures

Any three of the following:
- CS8-450 Seminar in Data Processing
- CS8-200 Computer Programming with FORTRAN IV
- CS8-300 Using the Statistical Package for the Social Sciences
- CS8-425 Information Systems
- MG8-410 Computer Utilization in Management Settings
- CS8-430 Systems Simulation
- CS9-220 Advanced FORTRAN
- CS9-275 Advanced COBOL
- CS9-100 Numerical Methods Using Computers
- CS9-280 Assembly Language IBM 360/370
- CS/HM9-490 Strategic Decision Making and Computer Systems
- CS9-291 Higher Level Programming in APL

Media, Arts, and Philosophy

Chair: Schaff

Art

Media

Music

Philosophy

Art

Professor: Carter, Kosmer
Assistant Professor: Casale, Kocher, Merle

The faculty of art offers diversified courses designed to help the individual understand and develop sensory perception, become aware of human artistic accomplishments, and perceive the possibilities of designing and changing the visual and physical environment.

Requirements for a Minor: 18 credits including a minimum of 3 credits in art history and at least one course at the 300 level. (The College reserves the right to retain some student work for demonstration and exhibition.)

Media

Professor: Davis
Associate Professor: McGough, Mitchell, Piccolo, Shea
Assistant Professor: Archibald-Seiffer, Byers

The media program provides students with skills in the communication process using vocal, mechanical, optical, electronic, or performance means. It is also designed to prepare students for beginning positions in business, industry, health services, and other fields in which their communication skills can be used.

Requirements for a Major: 36 credits including

ME 100 Introduction to Media
ME 201 Sources of Media Information
30 additional credits in media courses and in approved ancillary courses

Requirements for a Major in Media, Concentration in Communication Technology:

ME 100 Introduction to Media
ME 201 Sources of Media Information
Additional requirements as determined by the department

Requirements for a Major in Media, Concentration in Theatre:

ME 100 Introduction to Media
ME 201 Sources of Media Information
ME 135 Oral Interpretation of Literature
ME 191 Introduction to Theatre

Requirements for a Minor: 18 credits including

ME 100 Introduction to Media
ME 201 Sources of Media Information

Certificate Program

Requirements for a certificate in Instructional Communications and Technology: a minimum of 48 college credits before admission. The student must acquire 15 credits at Worcester State College including

Two core courses: 6 credits

ME8-400 Instructional Technology
ME8-420 Instructional Systems Design

Two electives from the following: 6 credits

EN8-106 Technical Communications in Business and Industry
EN8-121 Principles of Journalism
EN8-122 Techniques of Journalism
ME8-245 Design and Preparation of Media Graphics I
ME8-250 Photography I
ME8-254 Basic Videotaping
ME8-257 Super 8 Film Production
ME8-260 Slide/Sound Production
ME8-265 Audio Program Production
ME8-360 Television Production I

One elective related to the student's personal goals: 3 credits

Music

Assistant Professor: Celona, Sahagian

The music discipline considers appreciation, understanding, progress, and quality as its goals and offers a choice of courses in music literature and theory. Music as an educational factor in developing and broadening an individual is emphasized.

Requirements for a Minor: 18 credits

Philosophy

Professor: Schaff, Traub
Associate Professor: Robbins, Schlosser
Assistant Professor: Brophy

The purpose of philosophy is the development of a free, responsible, and civilized person with a critical and humane intelligence. To achieve this

objective the student studies the major philosophers in the ancient, medieval, modern, and contemporary periods, and the basic problems (political, social, moral, and metaphysical) concerning human nature and destiny.

Requirements for a Minor: 18 credits including
PH 120 History of Western Philosophy
PH 140 Philosophy of Science, Nature, and Man

Natural and Earth Sciences

Chair: Merken

Biology

Chemistry

Geography and Geology

Natural Science and Physics

Biology

Professor: Boger, Chauvin-Fortier, Graham, Holle, Paracer, Roberts
Associate Professor: Eager, Masterson, Russell

The faculty in the life sciences offers courses and programs to provide for the general education of students and preparation of the B.A. and B.S. major and minor in Biology. In addition it offers graduate programs toward the M.A., M.S., and M.Ed. degrees. The biology courses may also be supplemented with courses in nuclear medicine technology, administrative studies, health education, sports medicine, and public health biology. *Beta Beta Beta,* the national honor society in biology, is available to distinguished majors.

Requirements for a Major: 30 credits. A biology major is required to complete
BI 151 General Botany
BI 152 General Zoology
A minimum of two of the following:
BI 201 Introduction to Cell Biology
BI 202 Principles of Ecology
BI 203 Genetics
BI 204 Microbiology
BI 404 Biology Seminar (2 credits)
A minimum of five courses from among the designated upper-division electives (four of which must be laboratory courses) with the advice and consent of the faculty advisor

A quality point average of 2.0 must be maintained in biology courses and in the ancillary science and mathematics courses. Students considering graduate and professional work should take courses in the ancillary sciences including, as a recommended minimum, courses in general and organic chemistry, general physics, calculus, introduction to computer science, and statistics.

Biology elective courses include the 300-level courses generally; BI 402, Biological Problems; and BI 403, Biology Internship.

Requirements for a Minor: 24 credits

BI 151 General Botany
BI 152 General Zoology
A minimum of two of the following:
BI 201 Introduction to Cell Biology
BI 202 Principles of Ecology
BI 203 Genetics
BI 204 Microbiology
Two 3- or 4-credit courses from among the designated upper-division electives with the advice and consent of the faculty advisor
A minimum of 6 credits in the ancillary sciences

Requirements for a Major in Biology with a Minor in Education: 26 credits. Students who wish to prepare for certification to teach in the secondary schools must also complete a minor in education. Students in this program must have the approval of the Department of Natural and Earth Sciences and the Department of Education and Human Resources. Eligibility for student teaching requires

Biology: a minimum of six approved courses with a minimum quality point average of 2.0
Mathematics: a minimum of 6 approved credits in statistics, algebra, trigonometry, analytical geometry, calculus, or computer science
Chemistry: a minimum of 8 credits
General physics or physical science: a minimum of 6 credits

Students must maintain a minimum quality point average of 2.0 in mathematics, chemistry, physics, and physical science courses combined and must petition the department for admission to student teaching.

Requirements for a Concentration in Nuclear Medicine Technology: 48 credits. The department also offers, in conjunction with the University of Massachusetts Medical School, a concentration in Nuclear Medicine Technology, administered by a program advisory committee. Nuclear medicine is a study of techniques developed in hospitals, particularly in radiology, pathology, and internal medicine departments. These procedures are used for both diagnostic and therapeutic purposes. Students interested in being considered as candidates for admission to the program should contact either the program coordinator or the nominating committee through the Worcester State College Academic Advising Office. The program is limited to a relatively small group of students, and a competitive academic background in scientific methods, physics, and mathematics is required. MA 300, Calculus I, is a prerequisite. The technical specialty courses of the NMT program are listed below:

Introduction and Hospital Orientation (0 credits)
Medical Terminology (2 credits)
Radiation Physics (3 credits)
Radiation Biology (3 credits)

BI/PY 451 Nuclear Instrumentation I (4 credits)
BI/PY 452 Nuclear Instrumentation II (4 credits)
BI 454 NMT Clinical Practicum I (10 credits)
BI 455 NMT Clinical Practicum II (6 credits)
BI 456 NMT Clinical Practicum III (4 credits)
BI/CH 453 Radiopharmaceuticals (4 credits)
BI/CH 457 Clinical Nuclear Medicine Technology I (4 credits)
BI/CH 458 Clinical Nuclear Medicine Technology II (4 credits)

Graduate Program

Master of Arts and Master of Science

The M.A./M.S. program in biology is designed to broaden the matriculant's understanding of the biological sciences and to prepare for professional careers and doctoral study.

Admission Requirements: General admission requirements. The program is open to all who possess a substantial background at the undergraduate level. The applicant must have a quality point average of 3.0 in all course work within the major at the junior and senior collegiate level.

Requirements of the Program:

BI9-405 Seminar in Biology (3 credits)
Five core (9-005 to 9-095) biology courses (15 credits)
Approved biology electives (15 credits minimum)

In addition, reading competency in a language other than the candidate's native tongue or computer science proficiency or statistics proficiency is required. A minimum score of 450 on the Graduate Study Foreign Language Test of the Educational Testing Service is required to establish language competency. Students electing to satisfy computer science or statistics proficiency must meet the requirements established by the Natural and Earth Sciences Department in conjunction with the Department of Mathematics and Computer Science. Proficiency will be determined by the candidate's performance on a competency examination certified by the guidance committee or by the completion of a program of study approved by the committee with a minimum grade of "B."

Determination of Degree: Students completing the program receive either the Master of Arts or Master of Science degree depending on the following:

Master of Arts: Original research will be undertaken by the candidate. The thesis will be defended by the candidate in an oral examination conducted by the biology faculty. One to 6 credits will be granted.

Master of Science: The candidate must complete a satisfactory paper based on intensive study and review of the scientific literature or an approved practicum. The final copy of the paper, following approval by the candidate's guidance committee, will be evaluated by the entire committee. One to 6 credits will be granted.

Master of Education, Concentration in Biology

This program is designed to expand the knowledge of the principles of the biological sciences. The concentration seeks to coordinate and integrate professional graduate work in education with advanced study in biology.

Admission Requirements: General admission requirements. Applicants must have completed a minimum of 24 college credits in biology and a minimum of 18 credits in the ancillary sciences (chemistry, physics, and mathematics).

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Three approved core (9-005 to 9-095) biology courses: 9 credits
Approved elective courses from biology and chemistry: 6 credits
Additional education courses: 6 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in biology.

Certificate Program in Nuclear Medicine Technology

Admission Requirements: Baccalaureate degree from an accredited institution and successful completion of the following courses or their equivalents:

BI 161 and BI 162 Anatomy and Physiology I and II
CH 120 and CH 121 General Chemistry I and II
PY 115 and PY 116 General Physics I and II
Mathematics I, II, and III (including Calculus)

Requirements of the Program: The certificate program demands full-time study for one year. Students must devote forty or more hours each week for fifty weeks to on-the-job training and classroom instruction beginning on July 1. Courses are taught at the University of Massachusetts Medical Center. Supervised practicum experiences are completed at the Medical Center and affiliated Worcester hospitals. The following 40 credits are required:

Hospital Orientation (0 credits)
BI/PY 451 Nuclear Instrumentation I (4 credits)
BI/PY 452 Nuclear Instrumentation II (4 credits)
BI/CH 453 Radiopharmaceuticals (4 credits)
BI 454 Clinical Practicum I (10 credits)
BI 455 Clinical Practicum II (6 credits)
BI 456 Clinical Practicum III (4 credits)
BI/CH 457 Clinical Nuclear Medicine Technology I (4 credits)
BI/CH 458 Clinical Nuclear Medicine Technology II (4 credits)

Chemistry

Professor: Cooper, Merken, Zoll
Associate Professor: Ferguson, Wheaton

The chemistry program provides education and training in chemistry to students whose interests in the field range from a desire to learn something about it as part of their general education to an intent to pursue a career in chemistry, such as industrial chemistry, or a related field such as medicine, physics, biology, allied health, or environmental science.

Requirements for a Major: 36 credits

CH 120 and CH 121 General Chemistry I and II
CH 201 and CH 202 Organic Chemistry I and II (Lectures)
CH 203 Organic Chemistry Laboratory I
CH 210 Chemical Analysis: An Introduction to Modern Methods
or
CH 470 Instrumental Analysis
CH 301 and CH 302 Physical Chemistry I and II (Lectures)
CH 303 Physical Chemistry Laboratory I
8 credits chosen from among:
CH 204 Organic Chemistry Laboratory II
CH 210 Chemical Analysis: An Introduction to Modern Methods
CH 304 Physical Chemistry Laboratory II
CH 410 Biochemistry I
CH 411 Biochemistry II
CH 420 Qualitative Organic Analysis
CH 430 Advanced Inorganic Chemistry
CH 450 Special Topics in Physical Chemistry
CH 460 Natural Products
CH 470 Instrumental Analysis
CH 490 Independent Study

In addition majors are expected to complete the following ancillary courses:

MA 300 and MA 301 Calculus I and II
PY 115 and PY 116 General Physics I and II
or
PY 120 and PY 121 Physics I and II

Requirements for a Minor: 18 credits

CH 120 and CH 121 General Chemistry I and II
10 additional credits in 200-level or higher chemistry courses

Graduate Program

Admission Requirements: General admission requirements. The candidate must also have completed the following courses or their equivalents:

CH 120 and CH 121 General Chemistry I and II
MA 110 College Algebra

Requirements for a Master of Education, Concentration in Chemistry:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

CH8-200 Chemistry of Carbon Compounds
CH8-250 Physical Chemistry: A Life Science Approach
Five courses at the CH8-200 level or higher, selected with the approval of the guidance committee
Education elective: 3 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in chemistry.

Geography and Geology

Professor: Perry
Assistant Professor: Gould, Hunt, Hurd, Lingner, Thompson

Geography is concerned with the interrelationships of man in his environment. It is a dynamic discipline investigating processes in the physical environment and analyzing the location of man's economic, political, and social activities. Students learn to use tools for analysis of contemporary problems in environmental systems. The program in geography and geology offers a number of courses leading to a major in the field of geography. A minor in geography and a concentration in geography and environmental studies are available to interested students who may wish to use these courses to meet the natural science requirements in their programs of study. *Gamma Theta Upsilon,* the national honor society in geography, is available to distinguished majors.

Requirements for a Major: 30 credits. A major in geography must complete the following required courses:

GE 101 Physical Geography
GE 102 Cultural Geography
GE 210 Geography of North America
Two courses in cartography
At least one advanced course in each of the following areas:
- Physical geography
- Cultural geography
- Regional geography

Two geography electives

No more than 45 credits will be accepted toward the degree without the consent of the department. Students may take a concentration in either physical or cultural geography by completing the basic requirements and completing 18 credits in the discipline.

Requirements for a Minor: 18 credits including

GE 101 Physical Geography
GE 102 Cultural Geography

GE 210 The Geography of North America
One elective each in physical, cultural, and regional geography

Natural Science and Physics

Professor: Chapman, Garrett, Kelley
Associate Professor: Belanger

The study of physics and natural science affords an opportunity to discover scientific fundamentals as part of a general education. Students can obtain preparation for technical employment opportunities or graduate study. The latter is considered essential for a career in physics.

Requirements for a Major in Physics: 30 credits including
PY 201 and PY 202 Mathematical Physics I and II
PY 210 Mechanics I
PY 230 Electricity and Magnetism I

Additionally, the physics major must take a minimum of one year of calculus and one year of chemistry.

Requirements for a Major in Natural Science: 38 credits selected to provide the following minimum distribution:
Two courses in mathematics
Four courses in any one science
Two courses in each of any other two sciences
NS 400 Natural Science Seminar

Requirements for a Minor in Physics: 18 credits selected from the following:
PY 115 and PY 116 General Physics I and II
or
PY 120 and PY 121 Physics I and II
PY 201 and PY 202 Mathematical Physics I and II
PY 250 Instrumentation and Electrical Measurement
PY 310 Modern Physics
PY 107 Physics of Urban and Environmental Problems

Requirements for a Minor in Natural Science: 18 credits, at least 6 in different sciences.

Requirements for a Concentration in Energy Studies: This concentration offers two options, Applied Energy Science, and Management and Design. Students are urged to plan the sequence of courses in consultation with their advisors.

Graduate Program

Master of Education, Concentration in Natural Science

Admission Requirements: General admission requirements.

Requirements of the Program:

Education foundation courses: 9 credits
- ED9-960 Research and Evaluation
- ED9-970 Advanced Philosophical Foundations of Education
- ED9-980 Advanced Psychological Foundations of Education

Natural science concentration courses: 15 credits
Education electives: 9 credits

Comprehensive Examination: Each candidate must pass a comprehensive examination in natural science.

Certificate Program in Energy Studies

The energy certificate will be awarded upon completion of 60 points earned through a combination of workshops and related activities. One half of one point is awarded for every clock hour of attendance at an approved non-credit lecture, seminar, or workshop; a maximum of 15 points may be obtained in this manner. The other points are earned by taking the academic courses listed below, each of which confers 15 points as well as 3 credits:

- NS8-120 Man's Environment: The World of Energy
- NS8-404 Energy Applications and Techniques
- NS8-679 Energy Auditing of Your Home or Business

Nursing

Chair: Goodman

Professor: Goodman
Associate Professor: Haley
Assistant Professor: Alexander, Brown, Campaniello, Lovering
Instructor: Giguere

Accredited by the National League for Nursing; member of: National League for Nursing (Council of Baccalaureate and Higher Degree Programs), American Association of Colleges of Nursing, Massachusetts Association of Colleges of Nursing, New England Organization for Nursing.

The program is for registered nurse and graduate nurse applicants seeking to build upon their educational and professional experience. The department offers a curriculum providing the student with the opportunity for the attainment of professional status as a fully functioning member within the health care system upon graduation.

Admission Requirements: A minimum of 60 undergraduate credits from an accredited college or university. College Level Examination Program (CLEP

general and subject examinations) and pre-entrance examinations may be accepted. The registered nurse applicant must submit evidence of current license to practice nursing in the Commonwealth of Massachusetts. The graduate nurse must submit evidence of date of graduation from the A.D. or diploma program. The graduate nurse must submit evidence of successful achievement of State Board Examinations in Nursing by the end of the first semester of the upper division courses or the student will be withdrawn from the major. References from the most recent employer and the administrator of the basic nursing education program should be sent to the Department of Nursing. Registered nurses with a baccalaureate degree in another area may earn a second degree in nursing.

All applicants must meet the following prerequisites for the nursing major:

CH 110 and 111 Introduction to General, Organic, and Biochemistry I and II
BI 161 and BI 162 Human Anatomy and Physiology I and II
BI 204 Microbiology
PS 110 General Psychology I
SO 100 Introduction to Sociology
PS 120 Human Development
or
PS 210 Child Growth and Development
SO 215 Medical Sociology
or
SO 220 Sociology of the Family

In addition applicants must complete the Pre-Entrance Nursing Examinations with successful achievement based on associate degree score at or above the 75th percentile in Nursing Care of the Adult I and II, Maternal Child Care Nursing, and Psychiatric Nursing (scores on these examinations which are available from the applicant's school of nursing will be accepted if taken within five years prior to admission); also the applicant must complete the Clinical Performance Examination (teacher-made), with successful achievement at or above 75 percent.

Requirements for a Major: 38 credits

Level I:
NU 300 Group Communication Seminar I
NU 310 Nursing Science I
NU 320 Nursing Theory

Level II:
NU 400 Group Communication Seminar II
NU 410 Nursing Science II
NU 420 Research Seminar

Level III:
NU 430 Group Communication Seminar III
NU 440 Nursing Science III
NU 450 Leadership in Nursing
NU 480 Independent Study (as desired)
Electives (as desired)

Social and Behavioral Sciences

Chair: Ashton

Psychology

Sociology

Psychology

Professor: Allard, Jones, Nash, Taylor, Widmayer
Associate Professor: Ashton, Cummings, Guarini, Matheson
Assistant Professor: Daly-Boxshus, Desrosiers, O'Connor

Psychology courses acquaint students with basic principles of learning, motivation, development, adjustment, and interaction and thereby provide a foundation for effective living and a background for a wide variety of career opportunities. The undergraduate major prepares students for graduate study in specialized fields of psychology, while three available career concentrations in industrial psychology, psychology of developmental disabilities, and psychology of mental health services in many cases prepare students for entry-level jobs. *Psi Chi,* the national honor society in psychology, is available to outstanding majors.

Admission Requirements: Admission is open to any student who is interested in psychology and who can maintain a 2.0 quality point average in the required and elective psychology courses.

Requirements for a Major: 30 credits up to a maximum of 48 including
PS 110 and PS 111 General Psychology I and II
PS 200 History and Systems of Psychology
PS 300 Psychological Statistics
PS 305 Psychological Methods
15 credits in psychology electives

Requirements for a Minor: 18 credits including
PS 110 and PS 111 General Psychology I and II
12 credits in psychology electives

Requirements for a Minor in Psychology: Developmental Disabilities: 19-21 credits. This minor is intended for students whose vocational goals include work with the developmentally disabled. Required courses include:
PS 110 and PS 111 General Psychology I and II
PS 210 Child Growth and Development
or
PS 215 Psychology of Adolescence
PS 310 Introduction to the Study of Exceptional Children
PS 380 Physiological Psychology
PS 415 Introduction to Neuropsychology
PS 400 Internship in Psychology

Requirements for a Minor in Industrial Psychology: 21 credits including
PS 110 and PS 111 General Psychology I and II
PS 285 Motivation
PS 300 Psychological Statistics (or the mathematical equivalent)
PS 340 Introduction to Psychometrics
PS 350 Group Dynamics
PS 360 Industrial Psychology

Graduate Program

Master of Education and Certificate of Advanced Graduate Study, Concentration in School Psychology

For information about this program see entry under Education, p. 65.

Sociology

Professor: Goss, Khlief
Associate Professor: Brooker, Pizziferri
Assistant Professor: Zeadey, Zelman

The sociology curriculum is designed to provide students with an appropriate frame of reference, through the systematic study of human society, for both social participation and the scientific evaluation of human behavior. The major begins the preparation of students who plan careers in sociology or related areas such as social work.

Admission Requirements: Admission to the sociology major is based on maintaining acceptable grades in the general foundation requirements and interests in the field of sociology. Interested students should apply in person to the chair of the Social and Behavioral Sciences Department. Upon admission each major is assigned an advisor and receives an orientation in sociology.

Requirements for a Major: 30 credits including
SO 100 Introduction to Sociology
SO 270 Social Theory I (may be waived by department)
A maximum of two courses at the 100 level
A minimum of three courses at the 300 level
At least one course at the 400 level

All courses taken beyond the minimum requirements will be credited as electives.

Requirements for a Minor: 18 credits including
SO 100 Introduction to Sociology
or
SO 110 Cultural Anthropology

one of which is a prerequisite to all 200-level courses. All prerequisites for 300-and 400-level courses must be met if the student wishes to elect courses at these levels.

7. Course Descriptions

UNDERGRADUATE COURSE NUMBERS

100-level offerings are introductory courses and other courses open to freshmen, including courses appropriate for the satisfaction of the distribution requirement (see page 27). 200-level courses are intermediate but do not require previous experience; 300-level courses are advanced courses with prerequisites; 400-level courses are generally for seniors and include seminars and independent study courses.

The description of each undergraduate course except those offered through the Program of Continuing Education is followed by a category number: 1, 2, or 3. Category 1 courses are taught every year, Category 2 courses are offered every two or three years, and Category 3 courses are offered whenever there is sufficient student demand and available staff time.

GRADUATE COURSE NUMBERS

8000-level courses are lower series graduate-level courses. Qualified undergraduates may enroll for undergraduate credit with the consent of the instructor or advisor. 9000-level courses are upper series graduate-level courses and are open only to graduate students.

All courses are three-credit courses unless otherwise indicated.

Art

UNDERGRADUATE COURSES

AR 100 Creative Painting

Various schools of painting are studied with particular attention to personal applications.
Category 1

AR 101 Art Forms

The theory and techniques of past and present art movements.
Category 1

AR 102 Drawing in Various Media

The student becomes acquainted with a variety of techniques used in drawing, and with their artistic applications.
Category 1

AR 103 Watercolor I

Students deal with various techniques used by water colorists, past and present. Individual exploration will be encouraged.
Category 3

AR 104 Figure Drawing

Drawing of the human figure, use of pencil, conte, pastel, pen and ink, watercolor, etc. (A model fee will be charged.)
Category 1

AR 105 Design I

The use of form, line, color and texture as design elements is studied. Images and techniques will be analyzed.
Category 1

AR 106 Creative Crafts

The course explores craft techniques from many cultures and stresses individual problem solving.
Category 1

AR 107 Sculpture I

Basic sculpture techniques are introduced; clay and terra cotta studies of the head and figure; plaster, piece molds.
Category 1

AR 108 Mixed Media

A variety of materials in both two and three dimensional forms. Representational and abstract works are studied.
Category 1

AR 109 Printmaking

Basic printmaking is explored: etching and relief printmaking. Prints from major artists are investigated.
Category 3

AR 110 Art History: Stonehenge to the Renaissance

Art styles and movements from prehistoric man to the Renaissance are surveyed; painting, sculpture, architecture.
Category 1

AR 111 Art History: The Renaissance to Picasso

Art from the Renaissance to the present is studied; the effects of scientific advances and sociological changes on art.
Category 3

AR 112 History of Medieval Art

Western European art (c. 800-c. 1400) and the effects of the social and intellectual climate on art.
Category 3

AR 113 History of Renaissance Art

The development of art in Italy and northern Europe (c. 1400-c. 1700) is traced; social and intellectual trends affecting the artist.
Category 2

AR 114 Foundations of Modern Art

Influential art movements of the 19th century and their effects on the first two decades of the twentieth century.
Category 3

AR 115 Art of the Twentieth Century

Surrealism and other art movements in Europe and American from the end of the first World War to the present.
Category 3

AR 120 Environmental Design

Analyzes urban area planning and elements responsible for the visual esthetics of a city through individual project building.
Category 1

AR 121 History of Modern Architecture

Major developments in 19th and 20th century architecture in Europe and America.
Category 2

AR 125 Art in the Elementary School

The function of art in the elementary school is explored as well as contemporary practices in art education.
Category 2

AR 200 History of American Art

Painting, sculpture, architecture and urban planning from pre-revolutionary times to the present.
Category 3

AR 201 History of Urban Form

The physical form of communities and cities from ancient times to contemporary planning.
Category 3

AR 209 Silkscreen Printing

Silkscreen printing is introduced with traditional methods forming the basis of the course: prints by contemporary artists.
Category 3

AR 300 Creative Painting II

Prerequisite: AR 100 or equivalent.
Painting techniques: stress on individual direction and growth. Appropriate historical examples of painting are examined.
Category 3

AR 301 Portrait Painting

Prerequisite: AR 100 or equivalent.
Various painting styles and psychological aspects of the face are used to approach the study of the portrait.
Category 2

AR 304 Advanced Figure Drawing

Prerequisite: AR 104.
Art studies of the human figure include finished in charcoal and pastel and preliminary studies for painting. (A model fee will be charged.)
Category 2

AR 305 Design II

Prerequisite: AR 105.
Advanced problems in two and three-dimensional design are given.
Category 2

AR 307 Sculpture II

Prerequisite: AR 107.
Work in various techniques includes metal and wood sculpture. (Students must provide their own wood chisels.)
Category 3

AR 310 Special Topics

Prerequisite: One art course or consent of instructor.
Particular art topics are examined according to the interest of the professor.
Category 3

AR 400 Independent Study in Art

Prerequisite: Limited to art minors with a mimimum of 12 credits in art.
A student desiring to engage in self-arranged studies must obtain plan approval before course registration.
Category 1

GRADUATE COURSES

AR8 - 105 Mixed Media

Exploration of the various ways of mixing art media in both two and three dimensional forms.

AR8 - 115 Basic Wood Design

Basic introduction to wood as a construction material. Originality of design encouraged. Hand tools and power tools explored.

AR8 - 116 Advanced Wood Design

Prerequisite: AR8 - 115, or consent of instructor.

Field group project utilizing design within the community. Direct approach to experimental design with an evaluation of the design's functioning process.

AR8 - 120 Creative Painting

A studio course designed to give students the opportunity to experience the use of acrylic or oil painting. Interpretation of a variety of subjects.

AR8 - 130 Sculpting I & II

Workshop courses using clay, wood and various metal materials. Beginning and advanced students may register and may begin at their own level.

AR8 - 134 Architectural Drawing and Graphics

Acquisition of basic skills in drafting and model making in order to express ideas and methods related to design and construction.

AR8 - 135 Alternative Energy Design for Home or Business

The process of design and the integration of appropriate alternative energy systems into the solution of student-selected design problems.

AR8 - 220 Creative Crafts

A course designed to introduce a number of craft techniques. Attention will be given to the creative process as it applies to personal needs as well as teaching needs.

AR8 - 250 Printmaking Workshop

Prerequisite: Any studio course.

A studio course emphasizing the woodcut and etching (line, aquatint, and soft ground etching). Students are urged to develop and refine visual ideas from work done in previous art courses.

AR/ED8 - 260 Art in the Elementary School

Th place and function of art in the elementary school, and contemporary practice through laboratory experiences.

Biology

UNDERGRADUATE COURSES

BI 101 General Biology

With appropriate reference to man, the course examines the unity and diversity of living systems in both plants and animals, and considers the processes of evolution. This course meets the general distribution laboratory science requirement. Three lectures and a two-hour laboratory per week.
Category 1.

BI 111 Social Biology

This course considers the "interface" between current biological technologies and the social, cultural, legal, and moral postures of modern man.
Category 1.

BI 112 Diseases and Mankind

Epidemiological approach to diseases of ancient and modern man, and the impact on history, religion, science, art and philosophy.
Category 1.

BI 113 Botanical World

Considers entire plant kingdom — especially endemic trees, flowers, algae, fungi (including use of diagnostic keys and "tree walks").
Category 2.

BI 114 Plants and Human Affairs

Man's dependence upon plants and their influence on civilization and its art, religions, literature, folklore, medicine, and human behavior.
Category 2.

BI 151 General Botany

The plant kingdom; taxonomy, natural history, anatomy, and evolutionary relationships; identification, classification, and dissection from macro-and microscopic viewpoints; three lectures and a three-hour laboratory per week.
Category 1. 4 credits.

BI 152 General Zoology

Basic concepts in animal biology, animal diversity with phylogenetic relationships, and comparative structure-function analysis of selected animals. Lectures and laboratory.
Category 1. 4 credits.

BI 161 Human Anatomy and Physiology I

Considers human pre-tissue biology, tissues, integumentary, nervous, special senses, endocrine, skeletal, muscular systems. Three lecture hours and two laboratory hours each week.
Category 1. 4 credits.

BI 162 Human Anatomy and Physiology II

Considers digestive, respiratory, cardiovascular, excretory systems; water and electrolyte balance, reproductive, and embryogeny. Three lecture hours and two laboratory hours each week.
Category 1. 4 credits.

BI 171 Basic Kinesiology

Structure and function of human skeletal muscles in relationship to motion and general body mechanics under normal and stress conditions.
Category 3.

BI 172 Exercise Physiology

The functions of the numerous systems of the human body during exercise and factors that may modify these functions.
Category 2.

BI 201 Introduction to Cell Biology

Prerequisities: BI 151 and BI 152.
The ultrastructure and cytochemistry of cell organelles are related to their functions; discussion of the evolution of cellular molecular machinery, cell bioenergetics, and nuclear phenomena.
Category 1.

BI 202 Principles of Ecology

Prerequisites: BI 151 and BI 152.
Basic ecological theory relating to organism-environment interactions; population dynamcis, and systems ecology.
Category 1.

BI 203 Genetics

Prerequisites: BI 151 and BI 152.
Introductory genetics with examples of human inheritance and recent developments in genetic engineering.
Category 1.

BI 204 Microbiology

Prerequisites: Introductory chemistry and biology courses.
The cytology, metabolism, and genetics of bacteria. Immune responses and control of micro-organisms are stressed. Three lectures per week, and one three-hour laboratory per week.
Category 1. 4 credits.

BI 301 Invertebrate Zoology

Prerequisite: Basic
Considers anatomy, taxonomy (including selected articles, International Code of Zoological Nomenclature), natural history, and evolutionary relationships of selected invertebrate phyla. Three lectures and a three-hour laboratory per week.
Category 2. 4 credits.

BI 302 Entomology

Prerequisite: BI 152.
Considers insects and their allies, chemical and biological control, and special references to agricultural pests and medical entomology. Lectures and laboratory.
Category 2. 4 credits.
Category 2. 4 credits.

BI 303 Parasitology

Prerequisite: BI 152.
Basic concepts in symbiology, study of life cycles, epidemiology, disease development, control and prevention of selected human parasites. Lectures and laboratory.
Category 2. 4 credits.
Category 2. 4 credits.

BI 304 Comparative Vertebrate Anatomy

Prerequisite: Basic.
Considers prochordate and chordate taxonomy and phylogeny, and systematic morphological comparison or representative chordates to establish homology, analogy, and evolution. Three lectures and a three-hour laboratory per week.
Category 2. 4 credits.

BI 305 Embryology

Prerequisites: Four courses in biology.
Morphogenesis of selected chordate embryos; principles of differentiation and evolution as interpreted in animal taxa. Three hours of lecture and a three-hour laboratory per week.
Category 2. 4 credits.

BI 311 Microtechniques

Prerequisites: Basic.
This course covers practical experience in making permanent microscope slides by the paraffin embedment method. Three hours of lecture and a three-hour laboratory per week.
Category 2. 4 credits.

BI 312 Biological Techniques

Prerequisites: BI 151 and BI 152.
Goals, literature, techniques and basic instruments of science; design, methods and limitations of applied science are discussed; laboratory demonstrations.
Category 2. 4 credits.

BI 313 Histology

Prerequisite: Basic
Examines the structure and function of animal tissues. Each student is required to prepare tissues using histological methods. Three lectures and a three-hour laboratory per week.
Category 2. 4 credits.

BI/NS 315 Neuroanatomy and Physiology

Prerequisites: BI 161, BI 162
The structural and functional organization of the central and peripheral nervous system. Principles of normal and abnormal transmission, integration and storage of information in neuronal pathways.
Category 1. 4 credits.

BI 321 Comparative Animal Physiology

Prerequisites: BI 151 and BI 152.
A comparison of selected physiological functions as seen and interpreted in various animal taxa.
Category 2.

BI 322 Mammalian Physiology

Prerequisite: Basic
Detailed consideration of circulatory, respiratory, muscle, and nerve physiology in mammals, including man. Laboratory concentrates on physiological measurement. Three hours of lecture and a three-hour laboratory per week.
Category 2. 4 credits.

BI 324 Endocrinology

Prerequisites: Basic and BI 161, CH 120, or BI 371.
The role of endocrine glands in the normal integration of animals; mechanisms of hormone action, function, and interrelationships. Three lectures and a three-hour laboratory per week.
Category 2. 4 credits.

BI 331 Marine Biology

Prerequisites: Basic and BI 301.
Considers the marine environment, its flora and fauna, distribution and production of plankton-nekton-benthos, zoogeography, bloeconomic factors and potential. Three lectures and a three-hour laboratory per week.
Category 2. 4 credits.

BI 333 Vertebrate Natural History Ectotherms

Prerequisites: Basic and BI 202.
Life histories, adaptations, distribution, systematics, and economic importance of ectothermic (cold-blooded) vertebrates (fish, amphibians, and reptiles) of northeastern U.S. Three hours of lecture and a three-hour laboratory per week.
Category 2. 4 credits.

BI 334 Wildlife Investigational Techniques

Prerequisites: Basic and BI 202.
Considers procedures for collection and analysis of field and laboratory data on vertebrate game populations useful to wildlife biologists. Three hours of lecture and a three-hour laboratory per week.
Category 2. 4 credits.

BI 341 Mycology

Prerequisite: BI 152.
The morphology, cytology, evolution and classification of the fungi. Three hours lecture and three-hour laboratory.
Category 2. 4 credits.

BI 342 Plant Physiology

Prerequisite: Basic
Fundamentals underlying plant processes — nutrition, metabolism, growth, development, and responses. Laboratory.
Category 2. 4 credits.

BI 351 Biology of Aging

Prerequisite: Basic or consent of instructor.
Considers characteristics of the aging process utilizing the newest theories based upon dynamics and function as well as upon metabolic regulation as they relate to disease and the acceleration of the aging process.
Category 3.

BI 370 Darwinian Revolution

Prerequisites: Two courses in biology.
Philosophical, religious, and social impacts of Darwin's theory of evolution by the process of natural selection. An interdisciplinary perspective.
Category 2.

BI 371 Molecular Biology

Prerequisites: Basic and BI 204.
Genesis and function of classical biology with stress on molecular form; evolution, exploitation, and ramification of molecular structure in cells, organs and organisms; three lectures and a three-hour laboratory per week.
Category 2. 4 credits.

BI 372 Immunology

Introduction to cellular defense mechanisms in health and disease; antigen-antibody reactions; human immune responses.
Category 2. 4 credits.

BI 373 Radiation Biology

Prerequisite: BI 111, BI 152 or BI 162.
Basic theories of interaction of ionizing radiations with living and non-living matter; industrial and clinical applications.
Category 2.

BI 401 Selected Topics in Biological Sciences

Prerequisites: Consent of department and instructor.
Each topic is a lecture and/or laboratory course in a selected area of the biological sciences presented by a departmental Instructor(s) and guest lecturers (where applicable); topic to be announced in advance; topics offered will meet student needs and interests.
Category 3. 1-4 credits.

BI 402 Biological Problems

Prerequisites: Consent of department and instructor.
Advanced semi-independent study of an approved biological problem by qualified, upper-level biology majors (under faculty supervision).
Category 3. 1-4 credits.

BI 403 Biology Internship

Prerequisite: Consent of department.
Intended for qualified, upper-level biology majors.
Category 3. 1-6 credits.

BI 404 Biology Seminar

Prerequisite: Consent of department.
Preparation and presentation of biological topics, chosen with the advice and consent of a faculty advisor.
Category 1. 2 credits.

BI/PY 451 Nuclear Instrumentation I

Prerequisite: Consent of NMT coordinator.
The structure, functions, and interactions of particulate and nonparticulate radiations with matter; detection, calibration, dosage, and statistical methods.
Category 1. 4 credits.

BI/PY 452 Nuclear Instrumentation II

Prerequisite: Consent of NMT coordinator.
Designed to further the skills of operating, calibrating, and performing routine maintenance on scanners, gamma cameras, well counters, and liquid scintillation counters.
Category 1. 4 credits.

BI/CH 453 Radiopharmaceuticals

Prerequisite: Consent of NMT coordinator.
Fundamental concepts of radiopharmaceutical production including basic radiochemistry.
Category 1. 4 credits.

BI 454 NMT Clinical Practicum I

Prerequisite: Consent of NMT coordinator.
Students will spend several days a week in a hospital observing the ongoing activities of a nuclear medicine facility and the examinations and procedures performed.
Category 1. 10 credits.

BI 455 NMT Clinical Practicum II

Prerequisite: Consent of NMT coordinator.
Guided by clinical instructors, student begins to acquire manual skills essential to nuclear medicine technologist. Supervised experience in performing all routine nuclear medicine examination and laboratory procedures.
Category 1. 6 credits.

BI 456 NMT Clinical Practicum III

Prerequisite: Consent of NMT coordinator.
Upon completion of this practicum, students should be skilled in performing both routine and non-routine nuclear medicine examinations and laboratory procedures.
Category 1. 4 credits.

BI/CH 457 Clinical Nuclear Medicine Technology I

Prerequisite: Consent of NMT coordinator.
Why a specific test is indicated; which radiopharmaceutical is preferred; and how the basic image appearance and/or numerical data may be altered by pathological states.
Category 1. 4 credits.

BI/CH 458 Clinical Nuclear Medicine II

Prerequisite: Consent of NMT coordinator.
Sample cases presentations using formulas, charts, tables, and calculations to arrive at examination parameters such as amount of dose, number of counts, speed of instrument, etc.
Category 1. 4 credits.

GRADUATE COURSES

BI8 - 005 Animal World and Its Evolution

Survey of animal kingdom, its evolution, natural history, and certain taxonomic considerations (including selected articles, International Code of Zoological Nomenclature).

BI8 - 010 Animal World and Its Evolution

Survey of plant kingdom, its evolution, and natural history; emphasis on endemic forms, especially trees via diagnostic keys and tree walks.

BI8 - 015 Microbiology for Health Studies

This introductory course considers the cytology, metabolism, and genetics of bacteria. Immune response and control of microorganisms.

BI8 - 205 Heredity and Human Affairs

Advances in human genetics are applied to situations to learn the social, ethical, and legal implications.

BI8 - 210 Toxicology and Drugs

The phenomenon of chemical-biological interactions and the harmful action of chemical agents in living systems.

BI8 - 215 Medical Botany

Considers plants that injure, heal, and/or nourish man.

BI8 - 220 Ecology of Soil Organisms

Explores the unnoticed and often disregarded community of soil organisms; stresses their ecology and significance.

BI8 - 225 Freshwater Ecology

Considers the effects of physical, chemical, and biotic factors present in standing and running waters on the ecology and productivity of freshwater systems.

BI8 - 230 Bio-Politics

The biological, social, and political considerations raised by 20th-century advances in medicine and biology will be explored.

BI8 - 235 Public Health Parasitology

Biology, epidemiology, disease processes, control and prevention of human parasites. Concentrates on selected protozoan, helminth, and arthropod organisms.

BI8 - 245 Principles of Immunology

Concerns the nature of various immune reactions and the immune response system.

BI9 - 005 Historical Perspectives in Biology

The nature, processes, and research approaches of the major biological discoveries and emerging new paradigms from the 17th century to the present.

BI9 - 010 Principles of Taxonomy and Evolution

Considers international codes of biological nomenclature, the history of taxonomy, methodology, facts and mechanisms of organic evolution, and contemporary issues.

BI9 - 015 Topics in Advanced Botany

Explores and reviews specialized topics in the life of plants.

BI9 - 020 Population Biology

Analyzes population density, growth, regulation, and energy relationships. Population interactions, organization, and evolution are stressed.

BI9 - 025 Topics in Physiology

Considers specialized topics in the physiology of mammals.

BI9 - 030 Biological Chemistry

Concerns the physical, chemical, and biological properties and metabolism of carbohydrates, proteins, lipids, DNA, and RNA.

BI9 - 035 Immunobiology

The biochemical and molecular nature of the immune reaction, immunologic specificity, genetics, differentiation; clinical applications.

BI9 - 105 Advanced Invertebrate Zoology

Considers anatomy, taxonomy, evolution, and natural history of selected invertebrate groups; especially minor phyla. Insect and parasitic helminths excluded.

BI9 - 110 Reproductive Physiology

Concerns the influence of sex hormones on the reproductive system, beginning with embryogenesis and early maturation and extending into the areas of fertilization, pregnancy, gestation, parturition, and lactation.

BI9 - 115 Neuroendocrinology

Emphasizes the hypothalamo-hypophysial system in mammals together with its influence on the central nervous system.

BI9 - 125 Physiological Ecology

Considers the physiological adjustments which animals make in response to environmental factors; emphasizes the physiological basis of animal evolution and distribution.

BI9 - 130 Herpetology

Concerns the structural and functional characteristics of amphibians and reptiles, their origin and evolution, their ecological relationships, and their distribution and natural history.

BI9 - 135 Biology of Symbiosis

Nutritional, metabolic and evolutionary mechanisms of partnerships in nature with emphais on the universality of symbiosis.

BI9 - 245 Fisheries Biology

Surveys the biology of fish populations and considers techniques of fisheries research to include analysis of abundance, distribution, population density, growth, age determination, morality, food habits, fisheries production and management theory. Selected field and laboratory experience will be required.

BI9 - 400 Selected Topics in Biology

Prerequisite: Consent of instructor.
May include survey and careful study of literature, experimentation, observation, and collection of data in field and laboratory.
1-3 credits.

BI9 - 405 Seminar in Biology

Study and discussion of current researches, books, and periodicals in the field of biology. The course also includes reports of research in progress. Required of all graduate degree candidates.

BI9 - 410 Independent Studies in Biology

(M.S. candidates in Biology). Requires a satisfactory paper based on intensive study and review of the scientific literature on a topic approved by the major professor with or without supplementary field or laboratory work (practicum).
1-6 credits.

BI9 415 Thesis Research in Biology

(M.A. candidates in Biology). Original research in biology, under the supervision of a member of the faculty and an acceptable thesis.
1-6 credits.

Business Adminstration

UNDERGRADUATE COURSES

BA 100 The Administrator

General survey course introducing students to the area of management and administration. Outlines broad subject areas in management.
Category 3.

BA 110 Fundamentals of Accounting I

Principles, concepts, procedures, and techniques of financial accounting necessary for the preparation, understanding, and interpretation of accounting information.
Category 1.

BA 111 Fundamentals of Accounting II

Prerequisite: BA 110.
Continuation of topics covered in BA 110.
Category 1.

BA 200 Fundamentals of Management and Organizational Behavior

Study of management practices and behavior in organizational settings. Emphasis on introduction to managerial principles, concepts and fundamentals.
Category 1.

BA 300 Problem Solving in Organizations.

Prerequisite: BA 200
Continuation of concepts covered in BA 200 fundamentals course. Some application of topics to situations.
Category 1.

BA 301 Theories and Cases in Administration

Prerequisite: BA 300.
Advanced study of the functions and processes of management. Application of topics covered in BA 300.
Category 3.

BA 305 Organizational Dynamcs

Prerequisite: BA 200.
A study of behavior principles which underlie the prevention and solution of problems in both individual and group contexts.
Category 1.

BA 306 Principles of Personnel Management

Prerequisite: BA 305.
An examination of the functional areas of personnel management regarding EEO/AA, recruiting and selection, training and development, compensation administration.
Category 3.

BA 310 Managerial Accounting

Prerequisites: BA 110, BA 111, BA 200.
Analysis, interpretation, and use of accounting data for effective managerial planning, control, and decision making.
Category 1.

BA 315 Quantitative Analysis and Information Systems

Prerequisites: CS 111, CS 231 or CS 280, and MA 302.
Introduction to basic quantitative analysis applied to management planning and operations systems. Includes business information systems and applications.
Category 1.

BA 320 Business Law I

Prerequisite: Consent of instructor.
Introduction to legal concepts as applied to the study of contracts, personal perperty, sales, and the Uniform Commercial Code.
Category 3.

BA 321 Business Law II

Prerequisite: BA 320.
Continuation of topics covered in BA 320. Study of laws of partnerships and corporations.
Category 3.

BA 360 Public Program Analysis

Prerequisite: BA 200.
Focuses on the implementation and evaluation of governmental programs; why some work and others do not.
Category 1.

BA 361 Public Management

Prerequisite: BA 200 or consent of department.
Emphasizes the key differences as well as the similarities between management practices in the private and public sectors.
Category 1.

BA 370 Intermediate Accounting I

Prerequisites: BA 110, BA 111.
Accounting theory, principles, concepts, and procedures applied to balance sheet, and income statement accounts. Presentation and interpretation of financial reports.
Category 1.

BA 371 Intermediate Accounting II

Prerequisite: BA 370.
Continuation of BA 370.
Category 1.

BA 372 Advanced Accounting I

Prerequisite: BA 370.
Mergers and consolidations; parent and subsidiary relationships; pooling of interests and purchases; fund accounting; price-level accounting.
Category 1.

BA 373 Advanced Accounting II

Prerequisite: BA 372.
Special advanced topics including review of Accounting Research Bulletins of the AICPA.
Category 1.

BA 374 Cost Accounting

Prerequisite: BA 310.
Accounting for costs in business enterprises. Emphasis placed on fundamental principles including job order, process, and standard costs.
Category 1.

BA 375 Federal Income Taxation.

Prerequisites: BA 370, BA 371.
A study of federal income taxation as applied to individuals, corporations, and partnerships.
Category 1.

BA 376 Auditing

Prerequisites: BA 371, BA 372, BA 374.
Basic auditing concepts and developments and their application to the examination, evaluation, and reporting of financial data.
Category 1.

BA 400 Management and Organizational Behavior I

Prerequisites: BA 300, and BA 305.
Study of concepts, theory, research and operational problems of organization behavior work groups and intergroup behavior models.
Category 3.

BA 401 Management and Organizational Behavior II

Prerequisite: BA 400.
Continuation of topics covered in BA 400 with additional theory and case studies; behavioral science/systems approach is taken.
Category 3.

BA 403 Financial Management I

Prerequisites: BA 305 and BA 310.
Financial statements, analysis for solvency and profitability, cash budgeting, working capital management, short term financial, use of financial leverage.
Category 1.

BA 404 Financial Management II

Prerequisite: BA 403.
Continuation of BA 403; evaluating investment opportunities and determining test costly sources of funds. Discounting cash flow, capital budgeting, cost-of-capital.
Category 1.

BA 405 Marketing I

Prerequisites: BA 200, MA 250.
Overview of the full range of activities involved in marketing; develops an understanding of marketing principles, problems, and processes.
Category 1.

BA 406 Marketing II

Prerequisite: BA 405.
Advanced topics covered in BA 405 with case studies to integrate all marketing functions.
Category 1.

BA 407 Fundamentals of Production Management I

Prerequisites: BA 300, BA 310, BA 315.
Principles of organization and administration of the function of production; translation of production requirements into facilities.
Category 3.

BA 408 Fundamentals of Production Management II

Prerequisite: BA 407.
Continuation of topics of BA 407 with focus on production planning and flow.
Category 3.

BA 409 Quantitative Analysis and Techniques I: Linear Models for Administration

Prerequisites: MA 302, BA 315.
Application of Q.A. techniques to problems of linear programming, inventory models, PERT-CPM networks.
Category 3.

BA 410 Quantitative Analysis and Techniques II: Stochastic Models for Administration

Prerequisite: BA 409.
Application of stochastic models and techniques to solution of operational problems. Includes waiting line theory, replace models, etc.
Category 3.

BA 415 Securities Analysis I

Prerequisites: BA 305, BA 310, BA 403.
Investigates securities exchange institutions. Explores measures used to evaluate investment opportunities. Industrial, transportation, insurance, banking and real-estate areas are considered.
Category 3.

BA 416 Securities Analysis II

Prerequisites: BA 310, BA 403.
Methods used to evaluate securities. Their place in the investment portfolios of industry, government, personal, and financial intermediaries.
Category 3.

BA 420 Marketing Research

Prerequisite: BA 405.
Nature and scope of marketing research. Application of scientific methods, sources and collection of data, reporting and evaluation.
Category 3.

BA 422 Retailing

Prerequisite: BA 405.
Demand analysis, consumer behavior, planning and control of the merchandising functions; retailing as a career.
Category 3.

BA 430 Administrative Practices and Management

Prerequisites: BA 300, BA 305, BA 315.
Overview and analysis of human conduct in work-organization settings.
Category 3.

BA 450 Health Systems in America

Prerequisite: BA 300, BA 305, or consent of instructor.
A course focusing on the administration of institutions in the health area.
Category 1.

BA 462 Employee Relations in the Public Sector

Prerequisite: BA 361.
A survey of practices in public personnel administration, emphasizing collective bargaining and the impact of unions.
Category 1.

BA 464 Government Budgeting Systems

Prerequisites: BA 111 and BA 361.
A "hands on" approach; how budgets are prepared and used as tools for policy-making.
Category 1.

BA 474 Corporate Law

Prerequisite: BA 320.
Corporate powers and corporate management. Designed for future corporate executives and accountants.
Category 3.

BA 480 Current Challenges to Management

Prerequisite: BA 200
The impact of governmental regulation on business and its response will be evaluated by unique debate-type format.
Category 1.

BA 481 Independent Study in Business Administration

Prerequisites: BA 300, BA 305, BA 310 and consent of instructor.
Independent study in business administration, usually involving field work which is not an internship.
Category 1. 1-6 credits.

BA 482 Selected Topics in Business Administration

Prerequisites: BA 305, BA 403, BA 405 and consent of instructor.
Selection of topics of mutual interest to the student and faculty.
Category 3. 1-6 credits.

BA 483 Internship in Health Administration

Prerequisites: BA 300, BA 450 and consent of department.
Practical experience in operations of health administration. Internships within co-operative health facilities with on-site supervision and evaluation.
Category 1. 1-6 credits.

BA 484 Internship in Public Administration

Prerequisite: BA 361 and consent of instructor.
An opportunity to gain practical experience in the operations of government under the supervision of agency personnel.
Category 1. 1-12 credits.

BA 485 Practicum in Public Management

Prerequisites: BA 361 and consent of instructor.
Group field work on a major project designed to improve the performance of a specific government agency.
Category 1. 1-9 credits.

BA 486 Internship in Business Administration

Prerequisites: BA 305, BA 403, BA 405, and consent of department.
Practical experience in operations of businesses. Internships within co-operative business firms with on-site supervision and evaluation.
Category 1. 1-12 credits.

BA 490 Administrative Strategy Formulation and Implementation

Prerequisite: BA 403, BA 405, or consent of instructor.
Capstone course drawing on information provided to students in other functional areas such as finance, marketing, general management; skill development.
Category 3.

BA 491 Independent Study in Health Administration

Prerequisite: BA 300, BA 450 or consent of instructor.
Independent study in health: usually involving field work which is not an internship.
Category 1. 1-6 credits.

BA 492 Selected Topics in Health Administration

Prerequisite: BA 361 or consent of instructor.
Selected topics in health administration of mutual interest to the student and faculty.
Category 3. 1-6 credits.

BA 493 Selected Topics in Government Administration

Prerequisites: BA 361 and consent of instructor.
Recent developments in public administration of mutual interest to students and faculty.
Category 3. 1-6 credits.

GRADUATE COURSES

MG8 - 073 Workshop in Management by Objectives

Application of M.B.O. through case studies, practical exercises, role playing, and field research.

MG8 - 100 Seminar in Small Business Management

Examines various aspects of small business management from financial and legal issues through personnel awareness and solution of small business problems.

MG8 - 120 Developing Financial Management for Small Businesses

Skills developed to plan, budget, administer, control and evaluate the financial aspects of small businesses.

MG8 - 130 Industrial Management for Small Business

Management skills for small business, ranging from business planning, production, planning to break-even analysis, cash flows.

MG8 - 140 Marketing for Small Business

Application of marketing techniques for small business; includes market research, sales and expense forecasting, cash flow, break-even analysis, etc.

MG8 - 175 Labor Relations and Collective Bargaining

Introductory review of the public and private labor-relations system in U.S.

MG8 - 180 Government Regulation of Business

Overview of government regulation of the operations of both large and small business firms.

MG8 - 200 Principles of Management and Organizational Behavior

Realistic and practical management skills are developed. Topics include conflict management, decision-making communication skills, leadership styles, goal-setting, evaluation.

MG8 - 210 Organizational and Human Dynamics

Examines the interaction between organizational structure and human behavior; study of concepts, theory, research and operational problems.

MG8 - 250 Budgetary Management for Administrators

Examines supervisory responsibility of budget development, allocation, and monetary control; includes non-technical fiscal control and decision-making.

MG8 - 300 Techniques of Problem-Solving in Organizations

Characteristic tasks of managers, decision-making, and problem-solving. Application through individual and group efforts.

MG8 - 350 Computer Utilization in Management Settings

Utilization of computer-assisted technology and systems analysis; a non-technical course ranging from state-of-the-art to management implications.

MG9 - 100 Managerial Economics for Administrators

Economics and operation of organizations; macro and micro theory, marginal analysis, price-output determinations, etc.

MG9 - 150 Behavioral Sciences for Administrators

Study of work-groups, intergroups, and individual behavior. adapting human resource utilization concepts and theories, and other research findings.

MG9 - 170 Marketing Management

Application of administrative tools to marketing functions from strategies to techniques.

MG9 - 175 Financial Management

Application of administrative tools to problem analysis and solutions in finance; financial asset utilization.

MG9 - 180 Organizational Operations

Application of administrative tools to solution of logistic, operational, and production functions; utilization of technological assets.

MG9 - 260 Operational Analysis and M.I.S.

Management information systems knowledge and tools including types, forms, uses, costs. Decision-making, inventory, PERT.

MG9 - 300 Administrative Policy Form and Strategy

Prerequisites: BA9 - 150, BA9 - 170, BA9 - 175 and any one of the following: BA9 - 100, BA9 - 500, BA9 -180, or equivalent, or consent of instructor.

Capstone integrative course designed to develop administrative skills, and implementation of strategies for organizations.

Chemistry

UNDERGRADUATE COURSES

CH 105 Nature of Chemical Change

The properties of matter viewed through simple reactions of familiar substances. Two lectures and a two-hour laboratory per week.
Category 1.

CH 110 Introduction to General, Organic, and Biochemistry I

An introductory survey of chemistry. Topics include atomic structure, chemical bonding and reactions, acid-base theory, introduction to organic chemistry. Three hours of lecture and three hours of laboratory per week. CH 110 and CH 111 are for students who do not plan to take additional courses in chemistry.
Category 1. 4 credits.

CH 111 Introduction to General, Organic, and Biochemistry II

Prerequisite: CH 110.
Continuation of CH110. Topics include functional groups and reactions of organic compounds and topics in biochemistry such as carbohydrates, proteins, lipids, and metabolic pathways. Three hours of lecture and three hours of laboratory per week.
Category 1. 4 credits.

CH 120 General Chemistry I

Modern survey of chemistry. Topics include chemical equations, properties of gases, atomic structure, periodic table, chemical bonding, chemistry of carbon. Three hours of lecture and three hours of laboratory per week. CH 120 and CH 121 provide the foundations for further courses in chemistry.
Category 1. 4 credits.

CH 121 General Chemistry II

Prerequisite: CH 120
Continuation of CH 120. Topics include elements of thermodynamics, acids and bases, reaction rates, oxidation-reduction reactions, and electrochemistry. Three hours of lecture and three hours of laboratory per week.
Category 1. 4 credits.

CH 201 Organic Chemistry I (Lectures Only)

Prerequisites: CH 120, CH 121.
Structure, reactions, mechanisms, and stereochemistry of the alkanes, alkenes, alkynes, dienes, alkyl halides. Introduction to aromatic chemistry.
Category 1.

CH 202 Organic Chemistry II (Lectures Only)

Prerequisite: CH 201.
Continuation of CH 201. Reactions and mechanisms of aromatic and mechanisms of aromatic chemistry; structures and reactions of alcohols, ethers, carboxylic acids, aldehydes, ketones.
Category 1.

CH 203 Organic Chemistry Laboratory I

Prerequisite: CH 201 taken previously or concurrently.
Techniques of preparation, purification, and identification of aliphatic compounds. One four-hour laboratory per week.
Category 1. 2 credits.

CH 204 Organic Chemistry Laboratory II

Prerequisite: CH 203.
Application of basic and more advanced techniques to increasingly complicated synthetic problems. One four-hour laboratory per week.
Category 1. 2 credits.

CH 210 Chemical Analysis: An Introduction to Modern Methods

Prerequisites: CH 120, CH 121.
Introduction to modern methods of chemical analysis including gravimetry, acid-base and redoxtitrations, potentiometry, u.v.-visible and automic absorption spectrophotometry, and gas chromtography. Two hours of lecture and six hours of laboratory per week.
Category 1. 4 credits.

CH 220 Chemistry of Energy and the Environment

Prerequisites: CH 120, CH 121.
Chemistry of the environment; chemical aspects of energy; and the environmental aspects of energy production and use.
Category 3.

CH 230 Foundations of Chemistry and Physics

Prerequisites: CH 120, CH 121, PY 120, PY 121, or consent of instructor.
History, philosophy, methods, and concepts of physical sciences for science and nonscience majors. Emphasizes an understanding of science and scientists.
Category 3.

CH 301 Physical Chemistry I (Lectures Only)

Prerequisites: CH 120, CH 121, MA 300, MA 301.
A study of the first, second, and third laws of thermodynamics, and of chemical, solution, and phase equilibria.
Category 1.

CH 302 Physical Chemistry II (Lectures Only)

Prerequisite: CH 301.
Continuation of CH 301. Topics include chemical kinetics, quantum theory, chemical bonding, spectroscopy, and molecular structure. Three hours of lecture per week.
Category 1.

CH 303 Physical Chemistry Laboratory I

Prerequisite: CH 301 taken previously or concurrently.
Laboratory deals with methods of physical measurement of chemical systems and their application to the determination of thermodynamic data. One four-hour laboratory per week.
Category 1. 2 credits.

CH 304 Physical Chemistry Laboratory II

Prerequisite: CH 302 taken previously or concurrently.
Continuation of CH 303; project-oriented laboratory dealing with the study of reaction rates and

mechanisms, electrochemistry, and molecular properties. One four-hour laboratory per week.
Category 1. 2 credits.

CH 410 Biochemistry I

Prerequisite: CH 201, CH 202, CH 301, CH 302, or consent of instructor.
The chemistry of proteins, nucleic acids, carbohydrates, and lipids; enzymes, biological oxidations; and correlations in intermediary metabolism. Three hours of lecture and three hours of laboratory per week.
Category 2. 4 credits.

CH 411 Biochemistry II

Prerequisite: CH 410.
The generation and storage of metabolic energy; biosynthesis of macromolecular precursors, DNA, RNA, and protein; and biochemical regulation. Three hours of lecture and three hours of laboratory per week.
Category 2. 4 credits.

CH 420 Qualitative Organic Analysis

Prerequisites: CH 201, CH 202.
Analysis of organic compounds including separation of mixtures and identification of compounds by their physical properties and preparation of their derivatives. Two hours of lecture and four hours of laboratory per week.
Category 2.

CH 430 Advanced Inorganic Chemistry

Prerequisite: CH 301 or consent of instructor.
An in-depth presentation of topics such as wave mechanics, atomic structure, chemical bonding, spectroscopy, coordination chemistry, crystal field theory, and stereochemistry.
Category 2.

CH 450 Special Topics in Physical Chemistry

Prerequisites: CH 301, CH 302.
Exploration of frontier areas of physical chemistry including chemical kinetics, quantum chemistry, molecular spectroscopy, and symmetry properties of molecules.
Category 3.

CH/BI 453 Radiopharmaceuticals

Prerequisite: Consent of NMT coordinator.
Fundamental concepts of radiopharmaceutical production including basic radiochemistry.
Category 1. 4 credits.

CH/BI 457 Clinical Nuclear Medicine Technology I

Prerequisite: Consent of NMT coordinator.
Why a specific test is indicated; which radiopharmaceutical is preferred; and how the basic image appearance and/or numerical data may be altered by pathological states.
Category 1. 4 credits.

CH/BI 458 Clinical Nuclear Medicine Technology II

Prerequisite: Consent of NMT coordinator.
Sample cases presentations using formulas, charts, tables and calculations to arrive at examination parameters such as amount of dose, number of counts, speed of instrument, etc.
Category 1. 4 credits.

CH 460 Natural Products

Prerequisites: CH 201, CH202.
An advanced organic chemistry course concerning the structure, synthesis, and biological significance of compounds such as alkaloids, terpenes, steroids, and antibiotics.
Category 2.

CH 470 Instrumental Analysis

Prerequisites: CH 120, CH 121, together with CH 210 or CH 301 or two years of analytical laboratory.
Advanced level survey of instrumental methods of separation and analysis including spectrophotometry, potentiometry, polarography, and chromatography. Laboratories are project-oriented. Two hours of lecture and six hours of laboratory per week.
Category 2. 4 credits.

CH 490 Independent Study in Chemistry

Prerequisite: Consent of department.
Advanced independent work on a research problem in chemistry mutually agreed to by the student and the instructor.
Category 1. 1-3 credits.

GRADUATE COURSES

CH8 - 150 Chemistry and Our Environment

Considers the chemical aspects of our environment, including food, energy, and materials, and the problems of air and water pollution.

CH8 - 155 Current Trends in Chemistry and Nutrition

Fundamental concepts of chemistry with contemporary applications. The nutrition segment takes up human nutritional requirements, classes of foods, and dietary fads.

CH8 - 200 Chemistry of Carbon Compounds

Prerequisites: General Chemistry I and II.
The major classes of organic compounds. Topics include: structure, nomenclature, stereochemistry, reactions, and mechanisms.

CH8 - 210 Applications of Computers in Chemistry

Prerequisites: General Chemistry I and II.
Instruction in the scientific computer language of BASIC. Students will be assigned chemistry-oriented computer projects.

CH8 - 230 Chemical Perspective in Cancer

Prerequisites: One year of biology, General Chemistry I and II, Organic Chemistry recommended.
The historical evidence that chemicals can act as cancer-causing agents; modern theories of chemical carcinogens, and chemotherapy.

CH8 - 250 Physical Chemistry: A Life Science Approach

Prerequisites: General Chemistry I and II, College Algebra.
This non-calculus course in physical chemistry relates physical chemical principles to biological systems.

CH8 - 260 Industrial Chemistry

Prerequisites: General Chemistry I and II.
This course funishes a profile of the United States chemical (and pharmaceutical) industry and is for those in science, business, or management.

CH8 - 350 Laboratory Workshop in the Natural Sciences

Participants spend their time in the laboratory developing a store of functional experiments and demonstrations drawn from the physical, biological, and earth sciences.

CH8 - 375 Case Studies in the History of Science

Selected discoveries, concepts, and theories in contemporary science are examined in historical perspective. Intended for the non-scientist as well as the specialist.

CH8 - 410 Biochemistry Lecture I

Prerequisite: One year of organic chemistry.
See description of CH 410. Three hours of lecture per week.

CH8 - 410 Biochemistry Laboratory I

Prerequisite: One year of organic chemistry, Biochemistry Lecture I or Modern Biochemistry.
Laboratory course to accompany CH8 - 410-1 or CH8-415. One three hour laboratory per week.
1 credit.

CH8 - 411 Biochemistry Lecture II

Prerequisite: CH8 - 410-1.
See description of CH 411. Three hours of lecture per week.

CH8 - 411 Biochemistry Laboratory II

Prerequisites: Organic Chemistry I and II, Biochemistry Lectures II.
Laboratory course to accompany CH8 411-1. Three hours of laboratory per week.
1 credit.

CH8 - 415 Modern Biochemistry

Prerequisites: Organic Chemistry I and II.
Principles and concepts of modern biochemistry, including enzymes and the chemistry and metabolism of biochemical compounds.

CH8 - 440 Laboratory Techniques in Modern Analytical Chemistry

Prerequisites: General Chemistry I and II.
Introduction to modern instrumental techniques of chemical analysis for students who have a minimal background in chemistry. Three hours of lecture/laboratory per week.

CH8 - 864 Environmental Chemistry

Prerequisites: General Chemistry I and II, Organic Chemistry recommended.
The principles of environmental chemistry and chemical ecology including biogeochemical cycles and the nature of water systems and the atmosphere. Three hours of lecture/laboratory per week.

CH8 - 875 Science, Technology, and Society

The impact of science and technology upon the modern world. Problem areas include energy, population, transportation, health, space, communications, and government.

CH8 - 880 Chemical Evolution: Origins of Life

Prerequisites: General Chemistry I and II.
Traces a probable course of chemical evolution from simple substances to the formation of macromolecules and protocells. Three hours of lecture/laboratory per week.

CH9 - 421 Biochemistry of Nucleic Acids

Prerequisite: Biochemistry I, Modern Biochemistry, or Biological Chemistry.
The structure and function of DNA and RNA. Topics include bacterial, viral, and eukaryotic nucleic acids.

CH9 - 422 Structure and Function of Proteins

Prerequisite: Biochemistry I, Modern Biochemistry, or Biological Chemistry.
The biochemistry of proteins. Particular emphasis is given to enzymes and the kinetics of enzyme-catalyzed reactions.

CH9 - 423 Laboratory Techniques in Biochemistry

Prerequisite: Biochemistry I, Modern Biochemistry or Biological Chemistry.
This course includes the isolation and characterization of biochemical compounds with emphasis on nucleic acids and proteins, including enzymes.

CH9 - 451 Statistical Thermodynamics

Prerequisite: Physical Chemistry.
Introduction to the statistical mechanics of systems at equilibrium. Topics include kinetic theory, quantum statistics, chemical equilibria, and prediction of reaction rates.

CH9 - 453 Quantum Chemistry I

Prerequisite: Physical Chemistry.
Introduction to time-independent quantum theory. Topics include wave equations, quantum mechanical formalism, the hydrogen atom, matrix mechanics, and perturbation theory.

CH9 - 455 Quantum Chemistry II

Prerequisite: CH9 - 453.
Introduction to time-dependent quantum theory. Topics include time-dependent perturbation theory, the interaction of radiation with matter, and collision theory.

CH9 - 900 Special Problems in Chemistry

Prerequisite: Consent of department.
A laboratory or library research project conducted in consultation with a faculty member.

CH9 - 910 Directed Study in Chemistry

Prerequisite: Consent of department.
Designed for the student who wishes to undertake an individualized study in chemistry on a topic mutually agreeable to student and instructor.
1-44 credits.

CH9 - 963 Internship in Chemistry

Prerequisite: Consent of department.
Research project completed at an institution other than WSC by a student with a non-WSC sponsor and WSC liaison. Requires final typewritten report.

Communication Disorders

UNDERGRADUATE COURSES

CD 100 Speech Pathology

Nature and causes of organic and functional speech problems; emphasis on articulation, cerebral palsy, and voice; consideration of therapeutic techniques.
Category 1.

CD 105 Phonetics

A study of the sounds of the English language, their production, their representation by international phonetic symbols and their graphic transcription.
Category 1.

CD 110 Anatomy and Physiology of Speech and Hearing

Normal anatomy and physiology of the speech and hearing mechanisms with emphasis on respiration, phonation, resonance, articulation, and audition.
Category 1.

CD 115 Normal Development of Speech and Language

An in-depth coverage of the normal acquisition and development of speech and language, including phonolgy, morphology, syntax, and semantics.
Category 1.

CD 120 Speech, Hearing and Language Dysfunction in the Classroom

Typical symptomatology of speech, language, and hearing dysfunction among school-age children; techniques, and materials for their remediation.
Category 3.

CD 125 Principles of Teaching the Handicapped

Special methods and techniques for teaching the handicapped who have speech and hearing impairments, e.g., cleft palate, deafness, cerebral palsy.
Category 3.

CD 200 Introduction to Speech and Hearing Science

Basic information necessary for the fields of speech pathology/audiology; acoustic, frequency and intensity measurements; anatomy and physiology of the ear.
Category 1.

CD 205 Audiology

Prerequisite: CD 200
Basic acoustics, anatomy and physiology of the human ear, and ear pathologies; introduction to audiometric testing techniques.
Category 1.

CD 210 Language Disorders

Prerequisites: CD 100, CD 105, CD 110, CD 115, CD 200, CD 205.
The processes interfering with normal language acquisition and the disorders which disturb established language skills in children and adults.
Category 1.

CD 215 Voice and Articulation Disorders

Prerequisites: CD 100, CD 105, CD 110, CD 115.
The etiology, evaluation, diagnosis and therapeutic procedures for functional and organic voice and articulation disorders.
Category 1.

CD 225 Neurological Disorders of Speech.

Prerequisites: CD 100, CD 105, CD 110, CD 115.
Communication difficulties associated with cerebral insult; rehabilitative procedures in speech and language.
Category 3.

CD 300 Rehabilitation of the Auditorily Impaired

Prerequisites: CD 100, CD 105, CD 110, CD 200, CD 205.
Theory of practices used to improve communication for the auditorily impaired; visual and auditory impaired; visual and auditory perception of speech; orientation to amplification.
Category 1.

CD 305 Rhythm Problems and Allied Disorders of Speech

Prerequisites: CD 100, CD 105, CD 110.
Introduction to major theories of stuttering and associated problems, e.g., cluttering; basic therapeutic procedures for children and adults.
Category 1.

CD 310 Speech/Language Practicum I

Prerequisites: CD 100, CD 105, CD 110, CD 115, CD 200, CD 205, CD 210, CD 215, CD 305, and consent of instructor.
Observation and live practicum experience in evaluation, diagnosis and treatment of speech/language disorders; majors only.
Category 1.

CD 315 Language Therapy for the Deaf and Hard of Hearing

Prerequisites: CD 100, CD 205.
Receptive and expressive language acquisition of the auditorily impaired; appraisal and identification of symptoms and factors associated with language dyfunctions.
Category 1.

CD 320 Clinical Audiology Practicum I

Prerequisites: CD 205, majors only, consent of instructor. Course may be taken twice.
Review of clinical and audiometric techniques; assistance in clinical testing of clients in the communication disorders clinic.
Category 1.

CD 400 Speech/Language Practicum II

Prerequisites: CD 310, consent of instructor.
Continuation of CD 310; advanced experiences in diagnositic procedures and appropriate therapies with severe speech/language disorders; majors only.
Category 1.

CD 405 Aural Rehabilitation Practicum

Prerequisites: CD 300 and consent of instructor.
Basic experience in management of clients with hearing loss; clinical practicum provided.
Category 1.

CD 410 Tests and Measurements in Speech Correction

Prerequisite: CD 100.
Specific consideration of diagnostic tests and procedures used in the diagnosis of speech, language, and hearing disorders.
Category 2.

CD 415 Organization of Public School Speech Programs

Prerequisites: CD 205, CD 210, CD 215.
Objectives of speech correction programs; organizational guidelines; individual and group practice.
Category 2.

CD 490 Independent Study in Communication Disorders

Prerequisite: Junior and senior majors only, with consent of instructor.
The student will pursue an area of special interest in speech pathology or audiology through research or field experience, under faculty supervision.
Category 1. 1-3 credits.

GRADUATE COURSES

CD8 - 100 Introduction to Sign Language

Sign language systems and fingerspelling with emphasis on American Sign Language vocabulary in English word order.

CD8 - 108 Intermediate Sign Language

Prerequisite: CD8 - 100.
Students gain more facility in sign usage. Receptive and expressive vocabularies are expanded and fluency increased.

CD8 - 110 Advanced Sign Language

Prerequisite: CD8 - 108.
Students increase signing ability interacting with deaf people of varied language levels.

CD8 - 115 Speech and Language Development

Surveys the development of speech and language and the processes important to this development. Meets the LD concentration requirement for speech and language.

CD8 - 190 Microcomputers in Language Assessment, Development and Enhancement

Prerequisites: CD 100 and CD 115 or consent of department.
Students will learn abour current and potential users of microcomputers and microprocessor technology with language-impaired children and adults.

CD8 - 200 Auditory Processing Disorders and Techniques of Remediation in the Classroom

A course designed for school personnel. Includes types of auditory problems, associated symptoms, diagnostic report interpretation and habilitative teaching techniques.

CD8 - 250 Identification and Remediation of Hearing Disorders in the Public Schools

Prerequisite: CD 205.
Screening test techniques utilized in public schools; types of auditory problems; their etiologies; symptomatologies and treatment plans.

CD8 - 260 Speech and Language Problems in the Cognitively Impaired

Prerequisite: CD 115.
The etiology, evaluation, diagnosis and intervention of communication disorders in the cognitively impaired population.

CD8 - 280 Clinical Audiology

Prerequisites: CD 110, CD 200, CD 205.
Tests and techniques for the measurement of auditory processes. Interpretation of the test results and implications for remediation.

CD8 - 310 Current Events in Communication Disorders

Prerequisite: Professional in the field.
Review current events in communication disorders by reading and evaluating current print and non-print materials dealing with communication disorders.

CD8 - 320 Therapeutic Pragmatics in Communication Disorders

Interactive functions of human communication sequences will be studied to facilitate appropriate changes of action and behavior.

CD8 - 345 Applications of Behavioral Techniques in Communication Disorders

Applications of precision teaching and behavior modification techniques.

CD8 - 350 Psychology of Deafness

Effects of hearing loss upon daily work, education and social experiences of children and adults.

CD8 - 400 Articulation Disorders

Prerequisites: CD 100, CD 105, CD 110, CD 115.
Discussion of the anatomy/physiology of the articulatory mechanism. Study of the etiology, diagnosis and treatment of functional and organic factors.

CD8 - 460 Speech, Language and Learning Support Skills

Study of underlying skills (attention, audition, vision, etc.) important in speech, language learning. Helpful in understanding diagnositc reports.

CD8 - 475 The Speech-Handicapped Child in the School

An investigation of communication problems prevalent in school age children. Relationship between language and learning. Suggestions for remedial techniques.

CD8 - 500 Advanced Clinical Case Management

Prerequisites: Bachelor's or master's degree in communication disorders and consent of instructor.
Supervised diagnostic and therapeutic experience with a speech and language caseload in the communication disorders clinic.

CD9 - 190 Phonetics in the Language Arts and Reading Program

An introduction to the acoustic and physiological parameters of the spoken word with practice in transcribing the international phonetic alphabet.

CD9 - 200 Research in Communication Disorders

Prerequisites: CD 100, CD 105, CD 110, CD 115, CD 200, CD 205; matriculated graduate students or consent of instructor.
Review and critical analysis of research in the field of communication disorders. Students will write an original research proposal.

CD9 - 210 Pediatric Audiology

Prerequisite: CD8 - 280.
Evaluation, diagnosis, and special problems associated with hearing disorders in infants and preschool children.

CD9 - 225 Language Disorders in Children.

Prerequisite: CD 115.
Discussion of processes interfering with normal language acquisition and the disorders which disturb established language skills in children.

CD9 - 235 Language Disorders in Adults

Prerequisites: CD 100, CD 105, CD 110, CD 115, CD 205.
Discussion of processes and disorders which interfere with and interrupt established language skills of adults. Theories of testing and treatment.

CD9 - 240 Theories of Rate and Rhythm Disorders

Prerequisites: CD 100, CD 110, CD 115.
An in-depth study of the etiological theories and behaviors of rhythm disorders in children and adults.

CD9 - 250 Communication Problems of the Autistic or Severely Behaviorally/Language Disordered

Prerequisites: CD7 - 115, CD9 - 225 or CD 235, CD9 - 400.
Etiology, evaluation/diagnosis and intervention of communication disorders in the autistic or severely behaviorally/language disordered population.

CD9 - 260 Aural Rehabilitation

Prerequisite: CD8 - 280.
Identification, appraisal, and therapeutic techniques for speech and language through total communication with attention to learning, psychosocial disabilities.

CD9 - 270 Hearing Aids and Hearing Aid Selection

Prerequisite: CD8 - 280.
Study of construction of hearing aids and earmolds, methods of patient evaluation, and discussion of criteria for fitting hearing aids.

CD9 - 300 Voice Disorders

Prerequisites: CD 100, CD 105, CD 110, CD 115.
Discussion of vocal mechanism anatomy, physiology, and pathology. Detailed study of etiology, diagnosis, and treatment of functional and organic voice disorders.

CD9 - 310 Cleft Palate

Prerequisites: CD 100, CD 105, CD 110, CD 115, CD 215.
Study of development of maxillofacial anomalies, classification of clefts, surgical repair, associated defects, related speech and language disorders, and treatment.

CD9 - 320 Cerebral Palsy

Prerequisites: CD 100, CD 105, CD 110, CD 115, CD 205.
Etiology, diagnosis, and habilitation of speech and language problems associated with cerebral palsy. In-depth study of neurophysiological approach.

CD9 - 330 Evaluation and Treatment of Disorders of Rate and Rhythm

Prerequisite: CD 305.
Methods, theory and practice in preparation and administration of diagnostic objectives and materials.

CD9 - 350 Advanced Auditory Testing

Prerequisite: CD8 - 280.
Advanced test techniques for determination of site-of-lesion speech perception, speech discrimination, and central auditory processes.

CD9 - 400 Diagnostic Evaluation: Methods and Procedures

Prerequisites: CD 205, CD8 - 400, CD9 - 225 or CD9 - 235.
Intensive study of communication evaluation techniques. Includes test selection, administration, interpretation followed by report writing and remedial planning.

CD9 - 440 Industrial and Social Hearing Conservation

Prerequisite: CD8 - 280.
An investigation of environmental influences upon hearing loss in industry, military and other high-noise-level environments.

CD9 - 450 Advanced Anatomy, Physiology, Neurology and Pathology of the Speech and Language Systems

Prerequisites: CD 100, CD 110, CD 115, CD 205.
An in-depth study of the structure, function, and disorders of the speech and language systems.

CD9 - 460 Advanced Anatomy, Physiology, Neurology, and Pathology of the Auditory Mechanism

Prerequisite: CD 205.
An in-depth study of structure, function, and disorders of the auditory system.

CD9 - 490 Speech and Voice Science

Provides information necessary for indepth study of speech pathology as a science. Topics include acoustics, psychoacoustics, anatomy and physiology as they relate to the production, transmission and perception of speech. Introduces such laboratory instruments as the spectrograph, delayed auditory feedback, monaometer and sound level meter.

CD9 - 500 Acoustic Phonetics

Prerequisites: CD 105, CD 110, CD 205.
Investigation of acoustic correlates of vocal and phonetic production. Required laboratory use of electro-acoustic equipment in frequency and intensity analysis.

CD9 - 550 Instrumentation and Studies of Major Research Areas in Speech, Voice, and Hearing Science

Prerequisites: CD 110, CD 200, CD9 - 500.
Emphasis upon current instrumentation. Current research will be reviewed and/or replicated. New research will be encouraged.

CD9 - 700 Independent Study in Communication Disorders

Prerequisites: Major in communication disorders and consent of instructor.
Students may elect to take an independent study in course content, practicum experience, or independent research. 1-3 credits.

CD9 - 800 Seminar in Speech Pathology

Prerequisites: Completion of a minimum of 18 graduate credits in speech pathology and audiology and consent of instructor.
Study and discussion of current research techniques and professional trends in the field of speech pathology. Semester topics will vary.

CD9 - 850 Seminar in Audiology

Prerequisites: Completion of a minimum of 18 graduate credits in speech pathology and audiology and consent of instructor.
Study of current techniques, research and professional trends in audiology with topics varying each semester.

CD9 - 900 Clinical Practicum in Speech Pathology

Prerequisites: CD 205, CD8 - 400, CD9 - 225 or CD9 - 235, CD9 - 400.
Experience in the diagnosis and treatment of speech and language disorders in a variety of clinical settings. Speech pathology majors register for three credits in each of two consecutive semesters.

CD9 - 950 Clinical Practicum in Audiology

Prerequisites: CD8 - 280, CD8 - 400, CD9 - 225, or CD9 - 235, CD9 - 400.
Supervised clinical experience in the evaluation of hearing impaired. Audiology majors register for three credits in each of two consecutive semesters.

CD9 - 975 Aural Rehabilitation Practicum

Prerequisite: CD9 - 260.
Supervised clinical experience in the management of hearing-impaired children and adults; coordination between audiological diagnostic and hearing therapy services.

CD9 - 980 Speech/Language/Hearing Problems in the Aged

Prerequisites: CD 205, CD9 - 225 or CD9 - 235, CD9 - 400, or consent of instructor.
Overview of normal processes, comparison of symptoms and manifestation in normal aging, brain disorders, related diseases, as well as pseudosenility.

Computer Science

UNDERGRADUATE COURSES

CS 101 Computers in Society

Topics include survey of data processing, history, software, hardware, types of programming languages, introduction to management information systems, introduction to BASIC language programming.
Category 1.

CS 111 Programming Languages I

Basic computer operations, functional characteristics, applications in various fields and effect on modern society; familiarization with equipment and terminology; programming in an introductory language.
Category 1.

CS 212 Programming Languages II

Prerequisite: CS 111.
Advanced topics in an introductory language including string functions, sequential and random access files, sorting and chaining. Programs will be written which relate to general applications.
Category 1.

CS 230 PASCAL Language Programming

Prerequisite: CS 111.
Using PASCAL to solve various business and scientific problems. Topics include input and output statements, control statements, arrays, subscripts, records, and sets.
Category 2.

CS 210 Data Communications Systems

Prerequisite: CS 111 or CS 250
Topics include transmission in computer systems, bandwidth, transmission rates, multiplexing, common-carrier services.
Category 2.

CS 231 Business Programming I

Prerequisite: CS 111.
The fundamentals of the COBOL programming language: the purpose of each division, section, paragraph, verb, etc., and how to write programs to solve business problems using sequential file processing techniques.
Category 1.

CS 232 Business Programming II

Prerequisite: CS 111.
The fundamentals of the RPG programming language; the purposes and uses of the four basic RPG specification forms, and how to write programs to solve business problems using sequential file processing techniques.
Category 1.

CS 233 Information Retrieval and File Management

Prerequisite: CS 231.
Advanced aspects of the COBOL programming language: table processing, sorting, indexed sequential and random access files, master file updating and the report writer.
Category 1.

CS 234 Business Programming III

Prerequisite: CS 232.
Advanced aspects of the RPG programming language: table and array processing. Indexed sequential and random access files, master file updating and the use of the RPG file extension specifications form.
Category 1.

CS 250 Scientific Programming I

Prerequisite: CS 111.
Mathematical and scientific problem solving using FORTRAN: real and integer arithmetic, input and output, DO-loops, basic FORMAT, subscripted variables, subroutines, double precision and character manipulation.
Category 1.

CS 251 Scientific Programming II

Prerequisite: CS 250.
Higher level aspects of FORTRAN are considered, including advanced programming techniques, common block storage, advanced FORMAT, sequential, indexed sequential, and random access files and file manipulation.
Category 2.

CS 260 Management Data Processing

Prerequisite: CS - 111.
Management of the data processing function. Security, accuracy, control over hardware, software, and personnel. Evaluation procedures for hardware and software.
Category 2.

CS 275 Fundamentals of Business Systems

Prerequisite: CS 231
Introduction to the process of systems analysis and the design considerations of functioning business systems.
Category 2.

CS 280 Discrete Simulation and Modeling Techniques

Prerequisites: CS 212, MA 250.
Introduction of a range of analytical and simulation modeling techniques covering queuing, inventory, allocation and scheduling situations. Application of discrete simulation of problems using GPSS and SPSS.
Category 2.

CS 310 Computer Organization and Assembly Language Programming

Prerequisite: CS 250.
Topics include assembly, language programming and the study of a large third generation computer (such as an IBM 370), memory addressing, variable and fixed length words, register use, and other non-privileged instructions.
Category 2.

CS 315 Digital Logic Circuits

Prerequisites: MA 321, PY 260.
Topics include application of Boolean algebra to an analysis of combinatorial and sequential switching circuits. Characteristics of logic elements, memory devices, and logic circuits to accomplish code conversion.
Category 3.

CS 320 Micro, Mini Computers

Prerequisite: CS 231 or CS 250.
Topics include architecture of the new popular small computers, limits, languages, and specialized hardware.
Category 3.

CS 325 Programming Languange Concepts

Prerequisites: CS 230 or CS 231, CS 250.
Topics include comparison of syntax and semantic descriptions, data types and control, operations and sequencing, ease of use, applicability, generality, non-procedurality, and efficiency.
Category 3.

CS 330 Advanced PASCAL

Prerequisite: CS 230.
Advanced topics in PASCAL including files, data structures, recursion, sorting, and searching.
Category 2.

CS 350 Computer Architecture and Operating Systems

Prerequisite: CS 310.
Program and data handling software; hardware and software configuration as integrated systems, management and communication systems, advanced software engineering, asynchronous operation, interrupt processing, operating system interfaces.
Category 3.

CS 361 Data Structures

Prerequisites: CS 230 or CS 250.
Advanced techniques for program constructions and testing are emphasized. Topics include linked lists, trees, sorting, searching, string manipulation, and dynamic storage allocation.
Category 2.

CS 370 Compiler Design

Prerequisites: MA 321, CS 310 or CS 330.
Methods of compiling a high-level language into assembly language; a simple compiler to translate a modified BASIC into an assembly language such as MIX will be designed and tested.
Category 3.

CS 375 Business Systems Analysis and Design

Prerequisite: CS 231 .
All aspects of the analysis, design, and implementation of an application-oriented system (i.e., general ledger system, inventory control system, payroll system, or production control system).
Category 1.

CS 380 Systems Programming

Prerequisite: CS 310, CS 320 or CS 350.
A study of how operating systems interact with user programs, I/O programming, job and task management, interrupt, access modes for ISAM and SAM files, hands-on programming.
Category 3.

CS 400 Database Design

Prerequisite: CS 361.
The history and requirements of database development and maintenance; includes comparisons of commercially available models.
Category 3.

CS 410 Digital Computer Organization

Prerequisite: CS 315.
A study of the internal structure of a typical digital computer from both a logical and a hardware viewpoint; memory devices, arithmetic, and control circuits including LSI and MSI components.
Category 3.

CS 430 Analysis of Algorithms

Prerequisites: CS 230, CS 250.
Teaching proven algorithmic techniques for solving problems and for determing the relative efficiency of different methods.
Category 3.

CS 440 Computability and Finite Automata

Prerequisites: CS 430, MA 321.
Theory of computation, automata theory, recursive function theory, and formal grammars. Applications of finite automata theory to various areas of computer science will be considered.
Category 3.

CS 450 Management and Information Systems

Prerequisite: CS 233.
Use of computers in constructing an MIS system. Definition, design criteria, implementation considerations, and administration of the system.
Category 2.

CS 498 Internship

Prerequisite: Consent of department.
Working in and for an organization where skills can be tested in real situations in order to gain experience, increase knowledge in various functional areas, and establish important contacts with an organization.
Category 1.

CS 499 Independent Study

Prerequisite: Consent of instructor.
An opportunity for advanced students to examine topics not normally taught in other mathematics or computer courses. Geared to the interests of both the student and the instructor.
Category 1. 1-6 credits.

GRADUATE COURSES

CS8 - 150 Workshop in Computer Science

Students will be introduced to the computer, both hardware and software and will, through the use of a programmed text, be taught BASIC. Practical use of the computer will be stressed.

CS8 - 175 Computer Principles

Familization with various elements of computer technology. A thorough understanding and application of programming in BASIC will be developed.

CS8 - 200 Computer Programming with FORTRAN IV

Prerequisite: CS 111.
Considers the uses of computers for mathematical and scientific problem-solving; input and output statements, program branching, DO-loops, formatting, subscripted variables, subroutines, double-precision, character manipulation, and flowcharting.

CS8 - 230 Programming in PASCAL

Prerequisite: CS 111.
Using PASCAL to solve various business and scientific problems: input and output statements, control statements, arrays, subscripts, records, and sets.

CS8 - 250 COBOL Language Programming

Prerequisite: CS 111.
Writing COBOL language program utilizing cards, tape, and disk files.

CS8 - 275 Fundamentals of Systems Analysis

Prerequisite: CS 231or CS8 - 250.
All aspects of systems design and implementation: the feasibility study, problems definition.

CS8 - 278 RPG Programming

Prerequisite: CS 111.
Writing RPG programs oriented to practical business problems.

CS8 - 300 Using the Statistical Package for the Social Sciences (SPSS)

Utilization of SPSS integrated system for the analysis of social science data; descriptive statistics, simple frequency distributions, cross tabulations, simple frequency distributions, cross tabulations, simple correlation, multiple regression, and factor analysis.

CS8 - 400 Data File Structures

Prerequisite: CS - 230.
The concepts and usages of various file structures including sequential, index-sequential, random, tree and plex structures: the design, implementation and management of data base systems.

CS8 - 410 Hardware, Micro, Mini, and General Systems

Prerequisite: CS8 - 230 or CS8 - 200.
The technical aspects of computer systems as they relate to programming and systems development.

CS8 - 420 Management of Data Processing

Prerequisite: CS 111.
Hardware and software evaluation, scheduling and controlling systems development projects, privacy and security for hardware, software, and data bases, and accuracy controls in programming, data entry, and operations.

CS8 - 425 Information Systems

Prerequisite: CS8 - 275.
Includes information systems, file creation and maintenance, report generation and modeling and simulation.

CS8 - 430 Systems Simulation

Prerequisites: MA 301 and CS8 - 230 or CS8 - 200.
The methods and procedures involved in planning and designing simulation models. Course projects will use the simulation language CPSS to develop applications of computer models to queuing, inventory and scheduling systems.

CS8 - 450 Seminar in Data Processing

Prerequisite: CS8 - 250.
A final preparation for the CDP exam offered by ICPP. Brings together all the previous courses and introduces new topics of general interest to prospective data processing employees.

CS9 - 100 Numerical Methods Using Computers

Prerequisites: CS8 - 200, MA 310.
Numerical algorithms, techniques, and practical procedures for computer application. Standard algorithms from calculus, linear algebra, differential equations, and numerical analysis are considered.

CS9 - 220 Advanced FORTRAN

Prerequisite: CS8 - 200.
Higher level aspects of FORTRAN are considered; including advanced programming techniques, common block storage, advanced FORMAT, sequential files, and file manipulation.

CS9 - 275 Advanced COBOL

Prerequisite: CS8 - 250.
Problems and principles in the automatic handling of large information files utilizing a variety of input-output and storage devices.

CS9 - 278 Programming with RPG

Prerequisite: CS8 - 278.
Provides a broad foundation in RPG as applied to the IBM 360/370 and IBM System/3: applications to business-oriented problems. Programming techniques will be utilized.

CS9 - 280 Assembly Language

Prerequisite: CS8 - 175.
Computer structure and system organization. Machine language, IBM 360 and 370 architecture, instruction execution, addressing techniques and digital representation of data; structure of assemblers; program segmentation and linkage; and macro facilities; numerical and non-numerical projects.

CS9 - 290 Higher Level Programming in PASCAL

Prerequisite: CS8 - 230.
The language PASCAL will be studied using examples and problems. PASCAL utilizes the natural structure of algorithms and data to increase readability. PASCAL programs, loops, iterative procedures, data structures, etc. will be examined.

CS9 - 291 Higher Level Programming in APL

Prerequisite: Any computer language course.
APL will be studied via examples and problems. Data structures, arithmetic function, relation functions, vectors, etc. will be examined in detail. APL is a structural language.

CS9 - 300 Applied Information Systems

Prerequisite: CS8 - 275
Basic systems analysis skills and programming in a business language. Designing and programming specific business systems on case studies.

CS9 - 990 Seminar in Computer Science

Prerequisite: Minimum of 18 credits in computer science courses.
Topics in computer science

Counselor Training

GRADUATE COURSES

CT8 - 100 Introduction to Pupil Personnel Services

Provides the student with an understanding of the need, meaning and scope of guidance services. Principles and practices are considered.

CT8 - 200 Group Psychological Testing

Principles of psychological testing will be presented with emphasis placed on the role of the counselor and school psychologist in the selection and interpretation of individual and group psychological tests. This is a required course for all students matriculated in the counselor training program.

CT8 - 250 Theories of Assessment and Life/Work Planning

Theories of individual self-assessment. The work of Bolles, Crystal, Holland, and other proponents of self-assessment will be examined.

CT8 - 300 Theories of Counseling

Fundamental techniques and theories of counseling. Students will examine various theories of counseling and through the use of role-playing develop basic techniques in counseling.

CT8 - 310 Counseling Approaches For Death and Dying

An examination of the experience of dying from psychological, sociological, and cultural perspectives.

CT8 - 320 Art Therapy

Contribution of art therapy with emphasis on both the creative role of the artist and the healing and empowering role of the therapist as it affects human development.

CT9 - 400 Counseling and Guidance in the Elementary School

Various counseling techniques, evaluation process, organization and administration of guidance programs within the elementary school setting.

CT9 - 500 Counseling the Physically Handicapped

Basic disadvantages handicapped people face in our society today and the role of the guidance counselor.

CT9 - 100 Psychological Counseling Strategies

Prerequisite: CT8 - 300.

Developmental and Gestalt insight approaches, as well as behavioral approaches to counseling, will be analyzed for their effectiveness with a variety of psychological problems.

CT9 - 140 Counseling the Alcoholic and Drug Abuser

A study of alcohol and other drug abuse (physiological and psychological). Various treatment modalities will be examined.

CT9 - 150 Vocational Counseling Strategies

Techniques involved in developing self-awareness, values, psychological needs and drives as well as the influence of the environment in earlier development.

CT9 - 155 Vocational Development and Occupational Information

The ways in which individuals make decisions concerning their choice of vocations; types of information and data which are needed to aid people with these decisions.

CT9 - 160 Counseling Students with Special Needs

The special-need students. The role of a counselor and the role of Chapter 766. Facilities available to special needs students outside the school setting.

CT9 - 175 Seminar in Intervention Strategies

Prerequisite: Minimum of 24 credits in graduate courses, including PS9 - 540.
Emphasis is on current intervention strategies as applied to practical cases.

CT9 - 205 The Gestalt Approach and Transactional Analysis

Theories of Fritz Perls and Eric Berne, utilizing a lecture, discussion and experiential approach to help students explore these models as therapeutic tools.

CT9 - 210 Student Appraisal Procedures

Techniques for administering and interpreting student appraisal devices in elementary and secondary school programs; standardized and nonstandardized test devices; case study procedures.

CT9 - 250 Group Counseling I

Prerequisite: CT8 - 300.
Theories, methodology, and content of group andardized test devices; case study procedures.

CT9 - 251 Group Counseling II

Prerequisite: CT9 - 250 or consent of instructor.
Focuses on selected readings and provides an opportunity for students to develop their skills as facilitators or leaders by demonstration, practice and group feedback.

CT9 - 300 Individual Intelligence Appraisal (WAIS-WISC)

Prerequisite: Introductory course in measurement.
Study of two major Wechsler tests, Wechsler Adult Intelligence Scale (WAIS) and the Wechsler Intelligence Scale for Children (WISC). Includes administration and interpretation of both these scales.

CT9 - 350 Individual Intelligence Appraisal (Binet)

Prerequisite: Introductory course in measurement.
Study of the origin and use of the Stanford-Binet intelligence tests. Students will learn how to administer, score, and interpret the 1960 revision of the Binet.

CT9 - 425 Family and Parent Counseling

Prerequisite: CY8 - 300.
An understanding of the family system theory. Students will develop skills and counseling strategies relating to family and parent counseling.

CT9 - 450 Advanced Psychological Testing

Prerequisite: CT8 - 200.
Survey of tests and testing procedures, evaluating personality variables. Objective and projective measures of personality will be studied, stressing use in nonclinical settings.

CT9 - 550 Organization and Administration of Guidance

Latest procedures, techniques and problems in guidance programs. Analysis and discussion of unusual home-room, community group and individual guidance problems will be stressed.

CT9 - 800 Practicum in Counseling

This course is designed to give advanced graduate students opportunity to put into practice the various theoretical aspects of academic counseling and guidance.
6 credits.

CT9 - 925 Seminar: Current Issues and Procedures in Career Counseling

Most recent theories and techniques for career counseling and development of career education courses and programs within school systems.

CT9 - 950 Internship in Counseling

Prerequisite: Limited to advanced graduate students in the Counselor Education C.A.G.S. program. Consent of instructor required.
Students will work in a counseling center under supervision and obtain experience in the day-to-day operations of a school or agency center. Actual counseling will be included.

CT9 - 900 Current Issues Seminar in Guidance and Counseling

Recent issues and developments in guidance and counseling will be explored.

Economics

UNDERGRADUATE COURSES

EC 100 Introduction to Macroeconomics

An introduction to economic analysis with particular emphasis upon the national problems of achieving and maintaining full employment, general price stability and growth of the American economy through time.
Category 1.

EC 101 Introduction to Microeconomics

An introduction to the operation of the American market system and to the behavior of its participants whether consumers, producers, the government, or other nations engaged in international trade with the United States.
Category 1.

EC 102 Consumer Economics

An in-depth study of personal and family economics, obtaining income, buying wisely, consumer borrowing, saving, and financial investment; the growing consumer protection and consumer legislation movements will be specifically emphasized.
Category 1.

EC 200 Macroeconomics

Prerequisite: EC 100.
An intermediate analysis of the determination of the level and growth of national income and employment; special attention given to the problems of inflation and recession and to the national fiscal and monetary policies designed to maintain full employment and stable price levels.
Category 1.

EC 201 Microeconomics

Prerequisite: EC 101.
An intermediate level treatment of the theory of market pricing in a private enterprise system as it affects the resource and output decision of firms and industries under various market structures and the behavior of consumers.
Category 1.

EC 202 Labor Economics

Prerequisite: EC 101.
A study of the process of wage determination in a market economy; consideration given to the evolution of union organization and collective bargaining affecting wages, hours, working conditions and grievance procedures for labor.
Category 2.

EC 203 Government Policy Towards Business

Prerequisite: EC 101.
An analysis of the problems of competition and monopoly, especially as they affect concentration of economic activity and market power in the American industrial structure; emphasis is placed upon government policy to maintain or regulate competition in the public interest.
Category 2.

EC 204 Comparative Economic Systems

Prerequisites: EC 100 and EC 101.
A comparative study of the theory, institutions, and problems of advanced economic systems and their historical background; particular attention given to capitalism and socialism.
Category 2.

EC 205 Monetary Economics

Prerequisite: EC 100.
The historical and theoretical development of the American monetary system of commercial banks and financial intermediaries; emphasis on the role of monetary controls and policy as partial solutions to full employment, price stability, and economic growth problems.
Category 2.

EC 206 Urban Economics

Prerequisite: EC 100.
The theory and policy of the growth and development of metrolpolitan areas; some of the policy-related problems discussed are poverty, residential and commercial land use, and traffic congestion.
Category 2.

EC 207 Statistics

Prerequisite: For majors only.
Basic tools of statistical analysis appropriate to research in the social sciences; topics include measures of central tendency, hypotheses testing, time series, index numbers, regression and correlation.
Category 1.

EC 208 Economics of Health Care

Prerequisite: EC 100, EC 101.
Introductory study of the health care industry of the United States; pricing of health care, manpower availability, alternative delivery systems, third party payments, and government role in planning, regulating, and financing health care.
Category 3.

EC 210 Comparative Economic Systems

Prerequisites: EC 101, NS 260.
Principles and methods of cost estimating and money management in production of heat and power; considers residential, commercial and industrial applications.
Category 3.

EC 300 Industrial Revolutions

Prerequisites: EC 100, EC 101.
Historic cases of industrialization will be examined in terms of modern economic development and implications for presently underdeveloped economies.
Category 3.

EC 301 Economic Development

Prerequisites: EC 100, EC 101.
A survey of contemporary economic theories concerning less developed countries; social, cultural, and political forces shaping the development of such countries are also investigated.
Category 2.

EC 302 Development Planning and Regional Economics

Prerequisites: EC 100, EC 101.
A survey of the problems that must be dealt with by less-developed countries in planning their economic development. Theories of regional economics applicable to both developed and less developed economies.
Category 2.

EC 303 Radical Thought and the American Economy

Prerequisites: EC 100, EC 101.
Radical critiques, especially neo-Marxist ones, of corporate power, unemployment and inflation; how these forces influence U.S. government economics policies.
Category 3.

EC 304 Economics of the Environment

Prerequisite: EC 101.
Methods of pollution control and the socio-economic problems caused by pollution, current research on ecology and economics, and the impact that limits on pollution may have on income and population growth.
Category 3.

EC 305 Introduction to Math Economics

Prerequisite: EC 100.
A survey of some basic mathematical techniques appropriate to the analysis of economic models and application of economic theory.
Category 2.

EC 306 Introduction to Econometrics

Prerequisite: EC 100.
The application of statistical techniques to the verfication of economic models and examination of economic problems.
Category 2.

EC 308 International Trade

Prerequisites: EC 101, EC 101.
Reasons why nations gain by spatial specialization and exchange with other countries. Analysis of the mechanism by which international disequilibrium is restored. Study of trade and foreign exchange policies.
Category 2.

EC 309 Public Spending and Taxation

Prerequisites: EC 100, EC 101.
An analysis of government spending, revenue sharing, and taxation; includes the impact of government spending upon efficient use of resources and national growth.
Category 2.

EC 310 Post-War Stabilization Policies

Prerequisites: EC 100, EC 101.
U. S. stabilization policies since 1945. Of special concern will be the relative merits of monetarist and neo-Keynesian viewpoints about stabilization policy in light of the historical record.
Category 3.

EC 400 Independent Study in Economics

Prerequisites: EC 101 and consent of instructor.
For the student whose needs cannot be fully met by available offerings; actual arrangements to be made between student and professor; not intended for general enrollment; a limit of 3 credits can be acquired.
Category 1. 1-3 credits.

EC 401 Seminar

Prerequisite: Consent of instructor.
A research and discussion process intended to summarize and provide some career orientation to the undergraduate preparation of the economics major at the senior class level.
Category 3.

EC 402 Internship in Economics

Prerequisites: Advanced standing in economics major, high achievement and consent of staff coordinator.
Practical experience in economic analysis with industry and nonprofit organizations and government agencies; internships may be of varying length.
Category 1. 1-12 credits.

GRADUATE COURSES

EC8 - 210 Contemporary Problems and Issues in Economics

Prerequisite: EC 100 or EC 101.
Analyzes variety of issues such as ticket scalping, poverty, and financing education. Uses lectures, discussions, simulation games, and films.

EC8 - 255 The Economy in the Eighties

EC Considers inflation-related problems such as the energy crisis, slow growth in the GNP, and personal strategies for coping with inflation.

EC8 - 400 Workshop in Economic Education

Stresses the basic ideas of economics and introduces students to the various materials available for the teaching of economics at the secondary level.

Education

UNDERGRADUATE COURSES

ED 100 Developmental Reading

Reading comprehension. Practice in reading and study skills for freshmen and new transfer students only.
Category 1.

ED 105 Self-Assessment and Career Awareness

Students will be enabled to articulate with clarity a statement of self identification.
Category 1.

ED 110 Orientation to Early Childhood Education

Historical and philosophical overview of programs in day care centers, Head Start centers, nursery schools, and kindergartens.
Category 1.

ED 135 Introduction to Teaching and Learning

The theoretical and practical dimensions of elementary education.
Category 1.

ED 155 Emerging Opportunities for Educators

The emerging career roles of the educator. Recommended for students interested in learning about the broad area of education.
Category 1.

ED 185 Introduction to Modern Education

Designed to acquaint and inform the citizen, taxpayer, and prosepctive parent about education in today's society. Not for the education major or minor.
Category 2.

ED 210 Creative Experience in the Curriculum for Young Children

Prerequisite: ED 110.
Development and analysis of creative approaches and materials in art, music, drama, and movement that stimulate creative experiences for the young child.
Category 1.

ED 211 Curriculum Designs for Young Children

Prerequisites: ED - 110, ED 210, PS 210.
Planning programs and physical environment (materials, equipment arrangement and organization); evaluation of young children through observation as a basis for curriculum planning.
Category 1.

ED 212 Human Interrelationships in Early Childhood Education

Prerequisites: PS 210, ED 211.
Group dynamics and systems involved in educating the young child in day care centers, nursery schools, Head Start centers and kindergartens.
Category 1.

ED 235 Pre-Practicum I

Prerequisite: ED 135.
Practical participation in elementary school setting with emphasis on analyses and assessment of human interests, learning, management, and contributing factors. Adaptations in curriculum are stressed. Directed seminar is included.
Category 1.

ED 240 Pre-Practicum II

Prerequisite: ED 235
Advanced participation in elementary school settings and focus on curriculum and institution related to learning and analysis of teaching patients. Directed sènimar is included.
Category 1.

ED 245 Career Education in the Elementary School

Career education in the elementary school; awareness, concepts, objectives, exploration, and evaluation of career education.
Category 1.

ED 246 Library Skills in the Elementary School

Prerequisite: Junior and senior elementary majors.
Overview of procedures and materials helpful in teaching library skills to elementary school pupils.
Category 2.

ED 255 Learning Skills for Adolescents (11-19)

Prerequisite: Admission to teacher preparation program, minor in secondary education, or consent of instructor.
How to teach reading, study, and communication skills. Methods and materials appropriate to developmental stages, special needs, and social, racial and linguistic background of students.
Category 1.

ED 256 Fundamental Approaches for Teaching Adolescents (11-19)

Prerequisite: PS 215, admission to teacher preparation program, minor in education, or consent of instructor.
The practical teaching/learning implications of curricular resources and instructional skills.
Category 1.

ED 257 Individualizing Learning for Adolescents (11-19)

Prerequisite: Admission to teacher preparation program, minor in secondary education, or consent of instructor.
Individualized study programs and learning activities packets; used individually with students in the Developmental Skills program, and in the area middle and secondary schools.
Category 1.

ED 258 Evaluating Classroom Learning

Prerequisite: Admission to teacher preparation program, minor in secondary education, or consent of instructor.
Evaluating instructiuon, student readiness and achievement, using measures appropriate to middle and secondary schools. Students will utilize self-evaluation techniques and processes.
Category 1.

ED 285 Introduction to Children with Special Needs

Prerequisite: PS 210.
Special needs (learning disabilities); designed to orient prospect teachers with the problems of children with special needs.
Category 1.

ED 286 Identification of the Preschool Child with Special Needs

Prerequisite: PS 230.
The development of skills applicable to the process of identifying children with special needs.
Category 1.

ED 300 Educational Psychology

Prerequisite: PS 110.
Learning and developmental processes, motivation, retention, relationships of intelligence and achievement, creativity, personality, affective aspects of learning.
Category 1.

ED 301 History and Philosophy of Education

Prerequisite: Consent of instructor.
Contemporary problems of education in relation to selected ancient, medieval, and modern philosophers of education.
Category 1.

ED 302 Educational Measurement and Evaluation

Prerequisite: Consent of instructor.
Study, construction, and evaluation of instruments in education; interpretation of data; criteria for selection and evaluation of behavioral objectives and standardized tests.
Category 1.

ED 303 Urban Education

Prerequisite: Consent of Instructor.
Development of understanding of the social, psychological, and educational problems of the culturally different; strategies and techniques for teaching in the inner-city practicum.
Category 1.

ED 304 Education and Race Relations

Prerequisite: Consent of instructor.
The role of education in the promotion of interracial understanding.
Category 1.

ED 305 Creative Thought and Minority Experience

Prerequisite: Consent of instructor.
Provides opportunities for students to discover, explore, evaluate, appreciate, and collate examples and illustrations of creative expression in verbal forms as they relate to the minority experience in America.
Category 1.

ED 306 Methodology and Practice in Bilingual Education

Prerequisite: Consent of instructor.
Introduction to the problems and methods of teaching subject matter to students whose native language is other than English.
Category 1.

ED 307 Creative Problem Solving

Prerequisite: Consent of instructor.
Utilizing Piaget's three basic periods of operation (preoperational, concrete, and formal) in assisting the teacher to become aware of the means by which the child expands his perception of the world.
Category 1.

ED 308 Principles of Guidance

Prerequisite: Completion of sophomore year. Education minors only.
Considers role of guidance and counseling in the school; teacher's responsibilities as a functioning member of the guidance staff.
Category 1.

ED 309 Teaching for Creativity

Prerequisite: Consent of instructor.
Varying definitions of creativity and current measures of this construct; emphasis on student projects presented to class as simulated learning experiences.
Category 1.

ED 310 Early Childhood Education: Methods and Materials Core

Prerequisites: ED 110, ED 210, ED 212, ED 310.
Identifying the issues related to the integrations of theory and practice focusing on the total social, emotional, academic and physical development of preschool-kindergarten children.
Category 1. 15 credits.

ED 311 Field Experience in Early Childhood Education

Prerequisite: To be taken concurrently with ED 300.
Actual teaching experience in an approved day care center, Head Start center, or nursery school.
Category 1.

ED 312 Evaluating Children's Progress

Prerequisite: ED 210.
Understanding and interpretation of the results of psychological and educational tests of children of preschool age; seminar and discussions of children in a variety of child-care settings.
Category 2.

ED 313 Literature for Young Children

Prerequisite: Consent of instructor.
Investigation of books and other materials for preschoolers; study of effective procedures for reading aloud to youngsters.
Category 2.

ED 314 Approaching Reading with Young Children

Prerequisite: Consent of instructor.
Overview of the reading process; basic reading readiness skills and strategies for teaching these; initiating beginning reading procedures for children who are ready to read.
Category 2.

ED 315 Language Development and Communication in Young Children.

Prerequisite: Consent of instructor.
Role of teaching in guiding young children in learning language; sequence of skills in developing vocabulary, speech, listening, and writing competencies.
Category 2.

ED 316 Organization and Supervison of Programs in Early Childhood Education

Prerequisite: ED 420.
Organizational and supervisory strategies used in programs in early childhood education.
Category 1.

ED 335 Methods and Materials, Block I: Mathematics, Science, Social Studies

Prerequisites: ED 135, PS 110, PS - 210.
The concepts, attitudes, values, objectives, curriculum, materials, and media of the three subject areas.
Category 1. 9 credits.

ED 336 Methods and Materials, Block II: Reading, Language Arts, Children's Literature

Prerequisite: Consent of instructor.
The current status of the subject; the spiral of skills development through the grades; selection, demonstration and evaluation of teaching techniques and materials.
Category 1. 9 credits.

ED 337 Current Trends in the Teaching of Reading

Prerequisite: ED - 336.
Review of innovations, assessment of latest instructional materials; overview of research and current implementation of changes in reading instruction.
Category 1.

ED 338 Reading in the Elementary School

Prerequisite: Consent of instructor.
Intensive overview of the basic reading skills; effective teaching strategies; utilization of multimedia in reading instruction. A prerequisite to student teaching.
Category 1.

ED 339 Children's Literature

Prerequisite: Consent of instructor.
Facets of literature for children and criteria for the selection of each; techniques of preparation and use.
Category 1.

ED 340 Language Arts for Primary Grades

Prerequisite: Consent of instructor.
The inter-relatedness of the language arts; functional ways of working with young children; creative development of critical thinking.
Category 1.

ED 341 Language Arts in the Elementary School

Prerequisite: Consent of instructor.
The functional and creative aspects of oral and written expression; development of language power in relation to child growth.
Category 1.

ED 342 Mathematics in the Elementary School

Prerequisite: Consent of instructor.
Techniques for teaching arithmetic in the elementary school; emphasis on material development and classroom evaluation of materials and techniques. A prerequisite to student teaching in mathematics.
Category 1.

ED 343 Social Studies in the Elementary School

Prerequisite: Consent of instructor.
The aims, methods, and materials involved in teaching social studies.
Category 1.

ED 344 Science in the Elementary School

Prerequisite: Consent of instructor.
Science in the elementary school; objectives, curriculum, materials, current practices, trends in science teaching. A prerequisite to student teaching.
Category 1.

ED 345 Problems of Instruction in Elementary School Science

Prerequisite: Ed 335, or consent of instructor.
Identification of problems; adaptation of available materials and resources.
Category 1.

ED 346 Linguistics for Reading Teachers

Prerequisite: Consent of instructor.
Use of current texts with a linguistic viewpoint, phonology and morphology; history of the development of the linguistic view.
Category 1.

ED 355 Foundations of Curriculum and Instruction at the Middle and Secondary School

Prerequisite: Admission to the teacher preparation program, minor in secondary education, or consent of instructor.
The curriculum, the needs and interests of students in the middle and secondary school; ancillary pupil services for meeting special needs of these students; school visitations, examination of curriculum materials, mini-teaching, etc.
Category 1.

ED 356 Curriculum, Methods and Media in Teaching Health Studies (5-12)

Prerequisite: ME 140, ME 145; admission to the teacher preparation program, or a major in health studies, minor in secondary education, or consent of instructor.
Techniques in the teaching of health studies.
Category 1.

ED 357 Curriculum Methods and Media in Teaching Mathematics.

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in the teaching of mathematics.
Category 1.

ED 358 Curriculum, Methods and Media in Teaching Physical Sciences

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, or a minor in secondary education.
Techniques in teaching the physical and natural sciences.
Category 1.

ED 359 Curriculum Methods and Media in Teaching Biology

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching the biological sciences.
Category 1.

ED 360 Curriculum, Methods and Media in Teaching the Behavioral Sciences

Prerequisites: ME 140, ME 145; admission program, minor in secondary education, or consent of instructor.
Techniques in teaching the behavioral sciences (including history, psychology, sociology, and anthropology).
Category 1.

ED 361 Curriculum Methods and Media in Teaching Social Studies

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching social studies.
Category 1.

ED 362 Curriculum, Methods and Media in Teaching English

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching English.
Category 1.

ED 363 Curriculum, Methods and Media in Teaching French

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching French.
Category 1.

ED 364 Curriculum, Methods and Media in Teaching Spanish

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching Spanish.
Category 1.

ED 365 Curriculum, Methods and Media in the Teaching of Business Management (5-12)

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching business courses.
Category 1.

ED 370 Curriculum, Methods and Media in Teaching in the Middle School

Prerequisites: ME 140, ME 145; admission to the teacher preparation program, minor in secondary education, or consent of instructor.
Techniques in teaching the subject matter of the middle school.
Category 1.

ED 385 Assessment of Children with Special Needs

Prerequisite: ED 285, ED 286.
Considers the psychological and educational deficiencies of children with special needs. Students will administer and interpret formal and informal tests to synthesize their results with available clinical information to build a picture of learning functions of special needs children.
Category 1.

ED 386 Prescriptive Techniques and Materials for Children with Special Needs

Prerequisites: ED 285, ED 286, ED 385.
Focus on teacher competencies for examining and devising methods and materials for the child with special learning needs; application of the diagnostic information will be related to the child's unique approach.
Category 1.

ED 387 Education of the Gifted

Prerequisites: PS 210 or PS 215, junior and senior education majors and minors.
The identification, characteristics, and personality factors of the gifted; the teacher's role and various organizational patterns; innovative procedures and techniques to nurture creativity.
Category 1.

ED 388 Classroom Techniques for Special Needs Child with Social and Emotional Problems

Prerequisite: Consent of instructor.
A consideration of behavioral and classroom management including applied behavior analysis, contingency management, behavior modification, the group process, counseling, and other therapeutic techniques.
Category 3.

ED 389 The Slow Learner in the Elementary School

Prerequisite: Consent of instructor.
Diagnostic and remedial measures studies, analyzed and applied to the slow learner (IQ 70 to 90) in the elementary school.
Category 1.

ED 390 Reading and the Open School

Prerequisites: ED 335, ED 336.
A review of learning style and scheduling instruction in the open school; examines literature on how reading is taught in the open school.
Category 1.

ED 392 Theoretical and Practical Foundation of the Open Classroom

Prerequisite: ED 435 or tutoring experience.
Theoretical and practical aspects of the open classroom.
Category 1.

ED 393 Community Resources for Children in the Elementary School

Prerequisite: Completion of freshman year.
Primarily for elementary teachers to survey programs and resources available in the community, the state, and at national levels.
Category 1.

ED 394 The Community School Concept

Prerequisite: Completion of freshman year or consent of instructor.
A basic introduction to the community school and the concept of community education.
Category 1.

ED 395 The Educator and Cultural Diversity

Prerequisite: Completion of freshman year.
To enable the educator to better understand the roots of diverse cultures in America. Emphasis will be given to the contributions of American Indians. Chicanos, and Puerto Ricans.
Category 1.

ED 400 Seminar: Childrens with Special Needs

Prerequisites: ED 295, ED 385, ED 386.
Research related to specific problems of children with special needs through the presentation of seminar papers. Praticum experience is required of all students.
Category 1.

ED 405 Directed Study in Curriculum, Methods, and Media in Teaching

Prerequisites: ME 140, ME 145, consent of Education Department and of representative of content area department.
Techniques in teaching of the subject matter.
Category 1.

ED 420 Field Experience and Seminar in Early Childhood Education

Prerequisite: ED 311
Field experience in an approved day care center, Head Start Center, or nursery school.
Category 2. 4 credits.

ED 430 Student Teaching in Early Childhood Education

Prerequisite: Completion of required education courses.
Actual teaching experience in a kindergarten or pre-school setting.
Category 1. 12 credits.

ED 435 Student Teaching in the Elementary School (Grades 1-6)

Prerequisite: Completion of required education courses.
Actual teaching in a local school; principles, techniques, and responsibility of planning, excuting, and evaluating teaching and learning.
Category 1. 12 credits.

ED 450 Independent Study in Elementary Education

Prerequisite: Completion of freshman year.

For the student who wishes to pursue independent study in education; faculty members from other disciplines may be called upon to counsel the student.
Category 1.

ED 475 Practicum in Teaching

Prerequisite: Completion of required education courses including the appropriate course in methods and media.
For the secondary education student; practice in teaching in middle and secondary school.
Category 1. 12 credits.

ED 500 Independent Study in Early Childhood Education

Prerequisite: Completion of freshman year.
For the student who wishes to pursue independent study in education; faculty members from other disciplines may be called upon to counsel the student.
Category 1.

GRADUATE COURSES

ED8 - 115 Administration of Federal Programs

Emphasis will be placed on the content of the law as well as the administrative problems dealing with implementation of regulations.

ED8 - 160 Reading Needs of the Adult Learner

Procedures and techniques for teaching reading to undereducated adults; includes beginning reading, comprehension, prescription, and evaluation.

ED8 - 210 Organizational Patterns of the Community School

National, state and local patterns of organizations within the community education movement will be developed. The community school concept will be explored as it relates to the theory of organizations.

ED8 - 215 Curriculum Development for Alternative Education

Participants will engage in the development of alternative programs and strategies based on available community resources.

ED8 - 216 The Role of the Family in the Community School

The relation of the community education concept to family life. The role of the family unit in the development of educational goals will be explored.

ED8 - 220 Community Resources to Meet Children's Needs

Resources available in the community, state, and at national levels; social and family services; health, medical, and mental health facilities; consideration of new concepts in health care and juvenile programs.

ED8 - 225 Workshop: Train the Trainer

For entry-level trainers (those with less than two years' experience) and for individuals interested in further exploring training and human resource development.

ED8 - 230 New Perspectives in Urban Education

A study of the changing role of the urban school with emphasis upon shared accoutability of administration, staff, and clients.

ED/AR8 - 260 Art in the Elementary School

The place and function of art in the elementary school, and contemporary practice through laboratory experiences.

ED8 - 270 Community Communication and Organization

Emphasis will be placed in this course on the development of the community school advisory council. The role, policy, and purpose of such groups will be developed.

ED8 - 276 Teaching ESL to Adults

Teaching non-English speaking adults. Relevant concepts in learning theory and linguistics, teaching techniques, and the necessary skills.

ED8 - 280 The Practice of Adult Education

An overview of adult education with major emphasis placed on the scope of the field, legislation pertaining to adult education and future developments.

ED8 - 292 Workshop in Adult Education

Workshops will focus on specific topics in adult education and human resource development.

ED8 - 305 Early Childhood Revisited

Historical and philosophical influences in early childhood.

ED8 - 315 Development of Math Activities for the Child Through Seven Years

Games and activities designed to help young children develop an awareness of and appreciation for mathematics.

ED8 - 320 Curriculum for Early Childhood Education

Studies the components of designing a curriculum for young children including content and organization of program, facilities and arrangement of space, staffing, evaluation, and parent and community relationships.

ED8 - 325 Literature for Young Children

Survey of quality literature appropriate for early childhood; development of programs in literature and effective storytelling procedures.

ED8 - 330 Methods and Materials in Early Childhood Education

Focuses on activities designed to enable young children to use their abilities to the fullest.

ED8 - 331 Development of Reading Readiness and Beginning Reading Activities for the Young Child

Development of activities and materials based upon study of the reading readiness skills and of beginning reading approaches.

ED8 - 334 Development of Reading Readiness and Beginning Reading Activities for the Young Child

Development of activities based upon study of the reading readiness skills and of beginning of reading approaches.

ED8 - 335 Exploring Science in Early Childhood Education

Study of science within the conceptual ability of the young child.

ED8 - 336 Language Development and Communication

Role of language and its development during the early childhood years.

ED8 - 337 Motor Development in the Young Child

Overview of research and techniques regarding the significance of physical activity in the early childhood years.

ED8 - 339 Day Care in Urban Settings

This course will explore the sociocultural concepts of urban early childhood education.

ED8 - 346 Evaluation and Remediation Techniques of Young Children with Special Needs

Multi-disciplinary approach to the evaluation of children with special needs.

ED8 - 347 Developing Materials for Young Children with Special Needs

Design and construction of materials to meet the specific needs of young children.

ED8 - 349 Music for Young Children

A participation course in which participants learn and practice a variety of ways to present music to young children.

ED8 - 355 Make it Workshops for K-3 Language Arts

Participants in this workshop will be developing stimulating learning games for use in their classrooms.

ED8 - 356 Make it Workshops for K-3 Math

The primary math skills of number sequence, computation, place value, fractions, time, money, inequalities, roman numerals, perceptual development, and attribute activities will be presented.

ED8 - 390 Special Problems in Early Childhood Education

This course will focus on the Child Development Association competencies.

ED8 - 395 Practicum in Early Childhood Education

An intensive supervised field experience involving daily interaction with young children of ages three to five.

ED8 - 405 Children Under Stress

This course will deal with abuse and neglect, symptoms of child stress, community responsibility, and resolution of problems.

ED8 - 409 Using Computers in the Early Childhood/Elementary Classroom:

Review/evaluation of early childhood/elementary courseware, development of courseware using authoring software. Overview of LOGO, word processing, classroom management software.

ED8 - 410 Consumer Problem Solving: (Grades 2-6)

Designed to stress the usefulness of mathematics through viewing the many ways it directly relates to a youngster's life.

ED8 - 412 Energy Education for Elementary Teachers

Designed to give teachers some of the basic knowledge of the principles and concepts of energy and energy utilization.

ED8 - 416 Modern Mathematics in the Primary Grades

Methods for coordinating mathematics activities, and strengthening logical thinking as well as the typical quantitative skills associated with mathematics curricula for young children.

ED8 - 417 Humanizing Social Studies in the Elementary School

Investigation of the component disciplines of the social studies and their impact on shaping recent curriculum and specific teaching stragegies.

ED8 - 418 Developing Independent Mathematics for Children

Surveys commercial materials, including computer software, and teacher-made games which can be adapted for use in traditional and open-classroom situations.

ED8 - 419 Modern Mathematics in Intermediate Grades

Fundamental concepts and techniques of arithmetic in intermediate grades.

ED8 - 425 Individualizing Instruction in Elementary School

Several approaches to individualization in the elementary school.

ED8 - 426 New Elementary School Science

Examines major objectives, teaching methodology, and materials of the newer elementary science curricula.

ED8 - 427 Science Activities for the Elementary School

Examines several approaches to the teaching of elementary school science.

ED8 - 431 Economic Education in the Elementary School

An emphais on the basic concepts of economic education and the development of curricula fostering economic literacy.

ED8 - 442 Music in the Elementary School

Explores the role of music in contemporary education.

ED8 - 445 Career Education in the Elementary School

Focuses upon the integration of career education into the elementary curriculum.

ED8 - 450 Individualizing Social Studies in the Elementary School

An intensive workshop focusing on developing a learning unit utilizing an activity card approach to individual or small group activities.

ED8 - 455 Integrating Ethnic Studies into the Classroom

Development of multi-ethnic and mutli-cultural resources.

ED8 - 461 Metric Education for the Classroom Teacher

Designed to provide teachers with a hands-on approach to learning this simple and logical system.

ED8 - 462 Discipline: Successful Classroom Management

Emphasis will be placed upon the teacher's role in establishing a positive classroom and school atmosphere.

ED8 - 470 Learning Centers

A consideration of the development of learning centers: their effectiveness and limitations; emphasis on techniques and approaches to their use.

ED8 - 480 Strategies for Behavior Problems

A consideration of the variety of techniques available for coping with behavior problems confronting teachers and parents.

ED8 - 485 Energy Conservation for the Elementary Classroom Teacher

Effective classroom techniques and concepts will be designed and explored with regard to a wide range of energy conservation instructional programs.

ED8 - 489 Newspapers in Education

Newspapers will be explored for their historical aspects, actual composition, freedom of the press, and behind-the-scenes production aspects. Learning activity packets will be developed utilizing newspapers.

ED8 - 490 Creative Materials and Environment in the Elementary School

The climate for creativity and stimulating creativity in the classroom will be developed.

ED8 - 493 Problems in the Improvement of Instruction

Emphasis will be to identify various techniques and strategies that may be used to improve instructional activities in the elementary school classroom.

ED8 - 494 Development of Curriculum Materials in Elementary School Science

Developing science curriculum materials for use with children.

ED8 - 500 Reading in the Elementary School

Intensive overview of basic reading skills, effective teaching strategies, and utilization of multi-media in elementary reading instruction.

ED8 - 503 Integrating Reading into Elementary Mathematics

The effects of reading instruction in mathematics, problem solving, and content acquisition will be studied.

ED8 - 504 Reading in a Continuous Progress Setting

Methods and materials to assist the classroom teacher, the reading specialist, and the reading teacher in setting goals and developing programs for children learning at different rates.

ED8 - 509 Critical Issues in Reading: 1980 and Beyond

Focuses on recurring problems in reading which continue to surface and confront educators at all levels.

ED8 - 517 Teaching Reading to the Inner City Child: Materials and Techniques

Concentration on methods found most effective in teaching of reading in target-area schools.

ED8 - 527 The Parent's Role in the Reading Program

Study of many ways children learn to read; development of reading skills; the parent's role in the reading process.

ED8 - 535 Developing Independent Learning Activities in Reading and Language Arts

Investigates the teaching of reading in the elementary school from the standpoint of other language arts.

ED8 - 565 Teaching Reading in the Middle Grades

This course is designed to assist those teaching reading to middle grade students.

ED8 - 570 Enriched Language Arts in Elementary School

This course is planned for teachers in the elementary school (K-6) to develop materials and methods that will enrich the teaching of language arts.

ED8 - 580 The Natural Way to Reading

Participants in this course will learn to apply the techniques in *The Natural Way to Reading.*

ED8 - 588 The Role of the Reading Specialist in Instruction and Program Development

Explores the function of the reading specialist within the framework of the school system.

ED8 - 620 Education of Children with Special Needs

A general consideration of the education of exceptional children.

ED8 - 705 Computer Skills for Classroom Teachers

This course will provide teachers with an introduction to computer programming (Basic), the use of computer terminals, and computer applications in the classroom.

ED8 - 710 Using Computers in the Middle/Secondary Classroom:

Review/evaluation of middle/secondary courseware and development of courseware using authoring software. Overview of LOGO, wordprocessing, classroom management software.

ED8 - 720 Comparative Education

Focus on differing organization and methods of education in several foreign countries.

ED8 - 756 Secondary Social Studies Curriculum

Examination and evaluation of several social studies curricula at secondary level.

ED8 - 760 Classroom Management Techniques for Secondary School Teachers

Provides an overview for various classroom management techniques that may be used in secondary schools.

ED8 - 765 Teaching Methods and Skills for Middle and High Schools

Students will demonstrate competencies in the appropriate techniques at the middle and secondary school.

ED8 - 775 Teaching Secondary School Mathematics

Current secondary mathematics curriculum, emphasizing effective teaching practices.

ED8 - 810 Language and Language Teaching

A survey of linguistic theories and derived methodologies relevant to teaching a foreign language.

ED8 - 830 The Understanding and Teaching of Culture

Approaches to cultural analysis and survey of techniques used to teach culture in the classroom. Conducted in Spanish.

ED8 - 840 ESL Methodology

Topics in second language acquisition and applied teaching methodology in teaching English to speakers of other languages.

ED8 - 850 Foundation of Bilingual-Bicultural Education

The rationale for bilingual education, its typology and survey of successful programs. Special consideration of the provisions of Title VII and the Massachusetts bilingual law.

ED8 - 860 Bilingual-Bicultural Curriculum

Theory, design, and development of bilingual-bicultural curriculum, leading toward an understanding of the factors affecting curriculum in bilingual-bicultural settings.

ED8 - 870 Methods and Materials in the Bilingual Program

Survey of methods and materials in the subjects taught in the bilingual schools.

ED8 - 915 Driver and Traffic Safety Education, Part I

The professional preparation of candidates for secondary school teaching in driver and traffic safety education.

ED8 - 920 Driver and Traffic Safety Education, Part II

A study of the role of alcohol as a drug in relation to traffic safety.

ED8 - 927 Educational Measurement and Evaluation

Considers the nature of measurement, its purpose and value in the learning situation, and the types of measuring techniques to be employed.

ED9 - 101 School Business Management and Administration

Studies the interaction between school management services and the total educational organization and its environment.

ED9 - 103 Fundamentals of School Finance

Considers the financial support and the allocation of resources in public education.

ED9 - 105 Public School Administration

A historical, philosophical, and sociological study of American school administration with a major emphasis on the function, duties, and responsibilities of the school administrator.

ED9 - 108 School Superintendency
Studies the typical problems associated with the school superintendency.

ED9 - 110 Educational Law
An in-depth investigation of specific school laws and how they relate to the administration of the role of the teacher and administrator.

ED9 - 112 Law for the Administrator
An in-depth investigation of specific school laws and how they relate to the administration of a modern school system.

ED9 - 116 Administrative Case Studies
Administrative principles and practices emerging from the study of case materials forms basis for class discussion.

ED9 - 120 Human Relations for Adminstrators
Examines the processes by which individuals attempt to reconcile their needs with the needs and demands of others.

ED9 - 127 Organization and Administration of the Elementary School
The many facets of elementary school administration and organization; the role of the principal as an administrator in the larger setting of present day education is stressed.

ED9 - 130 Seminar in Administrative Theory
A seminar course exploring selective administrative theory and its application to modern day educational problems.

ED9 - 135 Seminar in Public School Administrative Leadership
Explores the most modern trend of educational administration technology.

ED9 - 140 Curriculum Development Seminar for Administrators
A seminar course in curriculum theory, constructs, and hypotheses.

ED9 - 145 Educational Personnel Administration
Study of the policies and problems associated with the selection, assignment, orientation, in-service programs, evaluations, promotion, and retention of the professional and nonprofessional staff of a school system.

ED9 - 150 Collective Bargaining Strategies
A survey course on the basic designs, strategies and mechanisms used in preparing collective bargaining packages, counter proposals, and final proposals.

ED9 - 157 Educational Supervision and Evaluation
Designed to develop competency in the supervision and evaluation of teachers.

ED9 - 158 Organization and Administration of Middle and Secondary School
The role of the principal and assistant principal in the administration of the secondary school will be thoroughly examined.

ED9 - 162 Administration of Programs for Children with Special Needs
Examines the implications of the legislation for administrators who are responsible for implementing these programs.

ED9 - 165 Intellectual Foundations of American Education
This course will stress the foundations of American education, primarily in the twentieth century.

ED9 - 172 Grantsmanship for the Teacher and the Administrator
A basic course for the beginning grantsman; designed to show the beginner how to construct a grant.

ED9 - 177 Seminar: Science Supervision

Uses a problem-solving approach to examine the needs and responsibilities of today's science supervisor.

ED9 - 185 Practicum in Educational Administration Leadership

A 300-clock-hour practicum in an area of educational administration.
6 credits.

ED9 - 190 Special Problems in School Administration

A field-based experience designed around a special problem in administration of a school system.

ED9 - 195 Action Research Project I

Students will enroll for two consecutive semesters for this course. During the two semesters, students will meet both in large groups and individually in developing their action research projects.

ED9 - 196 Action Research Project II

Second semester of required two-semester consecutive course. Enrollment in both semesters is mandatory. During the two semesters, students will meet both in large groups and individually in developing their action research projects.

ED9 - 200 Programs for the Aging

This course will help participants examine issues, problems, and procedures in designing and implementing programs for older adults.

ED9 - 210 The Community School: Its Administration and Supervision

An understanding of community education administration is developed to prepare the student to operate a community school.

ED9 - 215 Teaching The Illiterate Adult

An understanding of the scope of adult illiteracy and the methods and procedures for teaching adult illiterates to read.

ED9 - 220 Community School: Processes and Problems

Develops a theory of community education and tests the assumptions established as necessary parts of a successful community school.

ED9 - 225 Designing, Developing, and Delivering Training Programs

Emphasis on design, implementation, and evaluation of training programs in the private and public sectors. For students with training experience.

ED9 - 235 Urban Education II

Emphasis on the identification of developmental levels and problems of inner-city children.

ED9 - 245 Social and Cultural Foundations of Urban Education

Exploration of the social and cultural factors which influence urban youth as well as urban schools.

ED9 - 250 History and Philosophy of Adult Education

Emphasizes adult education as a unique segment and change-agent in the broad field of education.

ED9 - 255 Directed Study in Adult Education

Prerequisites: Course in adult education and consent of the Director of Adult Education.
Intended for graduate students who have a background in the field and who have the opportunity to critically analyze a special problem or personal interest in adult education.
6 credits.

ED9 - 260 Psychology of the Adult Learner

Explores methods of learning which apply to adults. Identifies educational needs and problems of the adult learner in overcoming learning difficulties.

ED9 - 270 Program Planning for Adults

Examines the process of selecting components for adult programs and setting up the administrative structure to deal with them.

ED9 - 275 Administration in Adult Education

Explores effective strategies for establishing and attaining realistic goals when faced with administrative concerns such as funding, staff, facilities, and equipment.

ED9 - 280 Internship in Adult Education

Prerequisites: Completion of courses related to practicum and consent of the Director of Adult Education.
Participants will have the opportunity to work in an adult education program to obtain guided practical experience.

ED9 - 290 Special Problems in Community Education

The student will work closely with the instructor in the compilation and development of information concerning a particular problem that is current in the field.

ED9 - 291 Internship in Community Education

Prerequisite: Consent of instructor.
Designed to develop practical experience in the field in a leadership position. Placement under supervision in a community school or other approved agency.

ED9 - 293 Independent Study in Community Education

An opportunity for study of a special topic of interest in community direction.

ED9 - 296 Special Problems in Urban Education

Seminar for experienced teachers wishing to examine specific problems in urban education.

ED9 - 305 Case Studies of Young Children

Each student undertakes a systematic exercise in gathering and interpreting material on an individual child.

ED9 - 320 Intellectual Development in Early Childhood Education

Examines the intellectual levels of children based on current research including Piaget and others.

ED9 - 325 Evaluation of the Young Child

Understanding and interpretation of the results of psychological and educational tests applicable for use with children of preschool age.

ED9 - 350 Supervision and Administration in Early Childhood Education

Outlines steps for the organization and administration of day care centers, nursery schools, and other programs for young children.

ED9 - 360 The Pre-School Child with Special Needs

Detection, evaluation and remediation of learning disabilities in young children from three years.

ED9 - 380 Seminar in Early Childhood Education

Current issues and problems in the field of early childhood education will be discussed.

ED9 - 385 Independent Research in Early Childhood Education

This course is for students wishing to pursue independent study in a specialized area of early childhood education.

ED9 - 407 Behavior Modification

This course will emphasize the various techniques and approaches to behavior modifications from the point of view of the teacher and the parent.

ED9 - 408 Education of the Slow Learner

This course is an overall consideration of the various methods and techniques for teaching the slow learner (I.Q.70-90).

ED9 - 409 The Gifted Child

Methods for identifying the gifted student; characteristics and personal factors of the gifted; techniques and approaches for curriculum development.

ED9 - 410 Theory and Research in the Elementary School Curriculum

Prerequisite: ED 9-960.
Emphasizes ability to recognize, select, and pursue independent action research in one or more areas of the elementary school curriculum.

ED9 - 412 Individualizing Science in Elementary School

Approaches to individualizing of instruction in elementary school science.

ED9 - 414 Teaching Strategies for Multi-Ethnic Studies

Designed to meet the basic instructional needs required for the effective teaching of ethnic studies in today's classrooms.

ED9 - 416 Improving Social Studies Teaching Strategies

A process approach to improving the conceptual and skill development of elementary students focusing on the cognitive and affective skills pertinent to the social sciences.

ED9 - 417 Social Studies Curriculum and Materials

Current elementary curricula will be explored for their structure, specifically in terms of their incorporation of the various social science disciplines.

ED9 - 420 Seminar in Current Issues in Elementary Education

Prerequisite: Three graduate level education courses approved by the student's advisor.
Symposium approach will be flexible and contemporary; readings, participation in the seminar, and a written treatise on the pros and cons of major issues required.

ED9 - 430 Seminar in Social Education

Current issues and problems will serve as initiators for individual research into relevant areas of social education.

ED9 - 500 Foundations of Reading

Prerequisite: A previous course in reading or consent of instructor.
Reading growth examined in terms of learning modalities, current research and effective practice.

ED9 - 505 Current Trends in the Teaching of Reading

Prerequisite: A previous course in reading or consent of instructor.
Includes an overview and evaluation of recent innovations in the teaching of reading.

ED9 - 506 Current Strategies and Techniques in Elementary School Reading

Review of current methods of teaching basic reading skills. Examination of current diagnostic techniques for analyzing reading deficiencies and the development of appropriate strategies.

ED9 - 507 Current Strategies and Techniques in Secondary School Reading

Examines current theories of developmental, corrective, and remedial reading at the secondary school level.

ED9 - 509 Reading in the Secondary School

Consideration given to aspects of development of corrective and remedial reading at the high school level.

ED9 - 510 Psychology in Teaching Reading

Provides an understanding of the psychological bases of the reading process; applies the theories of the psychologist to classroom situations.

ED9 - 512 Advanced Study in the Teaching of Language Arts and Reading

Prerequisite: A language arts course at the undergraduate level taken within the past five years from an accredited institution and a course in children's literature.
Focuses on teaching reading and language arts skills through children's books, innovative methods, materials, and games devised by participants in the course.

ED9 - 515 Linguistics and Language Acquisition for the Reading Teacher

Presents the history of the English language, phonology, morphology, synyax, semantics, language variations, nonverbal communication, language acquisition, and their relation to elementary reading.

ED9 - 516 Teaching Language and Reading in the Inner City School

Emphasis will be placed specifically on the difficulties inner city children encounter in school in language arts classes.

ED9 - 520 Diagnosis of Reading Disabilities

Student identifies and assesses reading disabilities through the administration of reading tests. Field-based experience included.

ED9 - 525 Remediation of Reading Disabilities

Investigates materials and strategies for remediation. Student prepares and implements corrective programs of instruction. Field-base experience included.

ED9 - 530 Teaching Reading in the Content Areas

Presents meaningful theory and related teaching strategies to aid pupils in reading and learning from their content-area text books.

ED9 - 535 Literature in the Classroom

Introduces a balanced selection of literature and broadens the student's acquaintance with the exciting world of books from kindergarten through high school.

ED9 - 540 Seminar in the Administration and Supervision of Reading Programs

Examines and evaluates programs through current theories, developmental, and remedial aspects, staff development and laws pertaining to special needs.

ED9 - 545 Advanced Seminar in Children's Literature

Current issues and problems in the presentation of children's literature and their implications for teaching will be examined.

ED9 - 546 Reading Programs: Implementation and Administration

An analysis of various reading programs: a review of organizational patterns, instructional strategies, curriculum supportive materials, and evaluation techniques. A study of the administratve roles and responsibilities essential to effective reading instruction.

ED9 - 548 Reading Strategies for the Reading-Disabled Child

Consideration of the factors in remediating the child who has reading disabilities; techniques and approaches to alleviate such conditions.

ED9 - 550 Laboratory Practicum in Reading

Demonstration of competency, application of skills. Candidate plans and executes total remedial reading program in supervised field-based experiences of 150 clock hours.
6 credits.

ED9 - 558 Student Centered Language Arts

Developmental English curriculum featuring variety of innovative approaches and assignments for secondary school

ED9 - 560 Research in the Teaching of Language Arts and Reading

Research studies in the areas of language arts and reading. The history and origins of our English language will be explored.

ED9 - 570 Laboratory Practicum in Language Arts and Reading in the Elementary School

Children with language and reading problems will be helped using innovative materials and methods.

ED9 - 575 Creative Writing for Pupils in the Elementary School

Characteristics of creative student writing. Ways in which these characteristics can be developed and strengthened in children's writings.

ED9 - 600 Developmental Patterns of Children with Special Needs

Basic understanding of the child with special needs, including the characteristic psychological, educational and sociological impact of developmental deviations.

ED9 - 605 Educational-Medical Team: Mainstreaming the Handicapped

An examination of the medical and educational aspects of mainstreaming the physically handicapped.

ED9 - 609 Neuropsychological Assessment and School Problems

Prerequisite: A basic grounding in psycho-educational testing and consent of instructor.
Neuropsychological assessment procedures and their application in a school setting.

ED9 - 610 Analysis and Interpretation of Children's Behavior and Learning Environment.

Evaluation procedures used to assess academic, cognitive, affective, and behavioral functioning of the child. Formal and informal techniques for evaluating the effectiveness of instruction will be examined.

ED9 - 620 Development and Implementation of an Individualized Educatiohal Plan

Considers federal and state laws regulating the development and implementation of individualized educational plans.

ED9 - 625 Classroom Management Techniques

Discussion of the basic principles and procedures for behavior management and modification and their implementation in a school setting including treatment design as related to I.E.P. development.

ED9 - 630 Program Development and Evaluation

Examination of current and proposed organizational plans for the delivery of services; application of research findings to curriculum effectiveness; program evaluation in terms of meeting the individual needs within the total school structure.

ED9 - 640 Consulting and Interpersonal Skills

Focuses on the theories and techniques of consultation.

ED9 - 650 Practicum for the Generic Consulting Teacher

A field-based experience in which the student demonstrates competencies in the delivery of indirect services: consultation, assessment procedures, educational planning, classroom management, curriculum development and in-service education.
6 credits.

ED9 - 710 Current Issues in Education

Examination of the more important issues facing education. Emphasis will be placed on problem solving and case study approaches.

ED9 - 715 Education and Race Relations

Designed to provide a background of understanding of the role of the school in the development of interracial understanding, this course will include a study of members of the class.

ED9 - 730 Career Education in the Secondary School

Developing a successful model for implementing a career education program in the secondary classroom; awareness of available materials and teaching strategies.

ED9 - 740 Team Teaching in the Middle School

This two-week workshop is designed to provide middle school teachers with those skills and competencies needed for team teaching in the middle school.

ED9 - 750 Begone Dull Grammar

Review of causes for failures of past grammar approaches; experiencing of alternative approaches to achieve grammar objectives.

ED9 - 760 Individualizing Instruction in the Secondary School

Examines ways in which teachers may individualize instruction in the secondary schools.

ED9 - 780 Secondary Education Project/Seminar

Prerequisite: Completion of 21 credits of M.Ed. concentration in secondary education.
Integrating of required, core, and elective courses as applied to secondary education in general, and specifically to school situations of participants.

ED9 - 785 Secondary School Team Teaching

Explores various models of teams teaching in secondary schools.

ED9 - 804 Recent Research in Curriculum Development and Instruction in Science

Analysis of recent research in science education (K-12) and consideration of implications for curriculum design in science and for improvement of classroom teaching.

ED9 - 810 Principles of Curriculum Development

Aspects of curriculum development — society, culture, learning theories, taxonomics of educational objectives, structure, hierarchy, balance, politics, strategy for change, and relationship to instruction.

ED9 - 815 Theories of Instruction

Historical, philosophical, and psychological foundations of various theories of instruction.

ED9 - 820 Evaluation of Classroom Learning

Focus on techniques of classroom evaluation, including stating objectives, devising learning contracts, observation techniques, and classroom test construction.

ED9 - 825 Analysis of Curriculum Programs

Current curriculum programs in grades nursery - 12, an analysis of objectives, descriptive characteristics, and theoretical foundations. Student-devised criteria used to assess curriculum programs.

ED9 - 830 Seminar in Curriculum and Instruction

Prerequisites: ED9 - 810, ED9 - 815, ED9 - 825.
Opportunities for discussion and evaluation of curriculum and instruction as applied to a real or theoretical construct.

ED9 - 960 Research and Evaluation

Includes application of research and evaluation methods and designs including gathering and analyzing data, writing research, and making evaluation reports.

ED9 - 970 Advanced Philosophical Foundations of Education

Examines the basic principles of some major philosophers and demonstrates their effect on contemporary educational theories in the western tradition.

ED9 - 980 Advanced Psychological Foundations of Education

Analysis of major schools of psychology with attention to contemporary issues. Role of the educator in the learning process and application of psychological principles to specific classroom situations.

English

UNDERGRADUATE COURSES

EN 100 English for Communication Skills

Prerequisite: Consent of instructor.
Individualized instruction in the English language to meet specific needs of foreign students.
Category 1.

EN 101 English Composition I

Review of mechanics and other writing principles with practice in writing sentences, paragraphs and short essays. (Required of all freshmen unless exemption is granted by the department.)
Category 1.

EN 102 English Composition II

A continuation of EN 101. Further emphasis on writing and analysis of selected readings; instruction in the technique of research and the writing of a research paper. (Required of all freshmen unless exemption is granted by the department.)
Category 1.

EN 105 Introduction to Literature

A critical introduction to the principal genres of literature: poetry, drama, and fiction.
Category 1.

EN 110 Survey of American Literature I

American literature, beginnings to the Civil War; colonial and federal periods and transcendentalists.
Category 1.

EN 111 Survey of American Literature II

American literature since the Civil War; naturalism and realism.
Category 1.

EN 120 Survey of English Literature I

The development of English literature from the beginnings to 1798; required of all English majors.
Category 1.

EN 121 Survey of English Literature II

The development of English literature from 1798 to the present; required of all English majors.
Category 1.

EN 130 World Literature I

Greek and Roman masterpieces in translation, including Homer, Greek tragedy, Plato, and Virgil, as well as selections from the Bible.
Category 1.

EN 131 World Literature II

World masterpieces from the Renaissance to the modern period, with emphasis on continental works in translation.
Category 1.

EN 140 Introduction to Poetry

Examination and appreciation of the techniques and types of poetry including the sonnet, the pastoral, the mock heroic, and the ode.
Category 1.

EN 145 Introduction to Drama

Theories and development of tragedy and comedy: plays of Sophocles to Eugene O'Neill as illustrations of these and related genres.
Category 1.

EN 150 The Short Story

Introduction to the art of the short story through analysis of representative works.
Category 1.

EN 152 The Novelette

The major practitioners of the novelette over the past century: Conrad, Mann, Kafka, Dostoyevsky, and others.
Category 1.

EN 154 Twentieth-Century Literature

Major literary trends of the twentieth century.
Category 1.

EN 156 Mythology

Myths and legends of ancient Greece and Rome which form a part of the classical tradition in English literature.
Category 1.

EN 158 Science Fiction

The nature and function of nineteenth and twentieth-century science fiction literature: Wells, Verne, Asimov, Bradbury, and others.
Category 1.

EN 160 The Literature of the Bible

Biblical writings; emphasis will be placed on the Old Testament.
Category 1.

EN 162 American Folklore

A multi-genre approach will be used in the study of American folklore and folk life. Some field work will be required.
Category 3.

EN 167 Literature and Human Rights

An analysis of international creative writing dealing with the subject of human rights. Resource persons from different fields will be utilized.
Category 2.

EN 168 Film and Literature

An examination of the fundamental rhetorical techniques of film and literature to determine the similarities of and differences between the two forms of expression.
Category 2.

EN 170 The Search for Identity: Literature of Self-Discovery

Analysis of several literary works which deal with the experience of self-discovery and the nature of self: Conrad, Hesse, D.H. Lawrence, Tolstoy, and others.
Category 3.

EN 202 Medieval English Literature

Prerequisite: EN 120.
English literature from the twelfth to the fifteenth centuries with a focus on lyric poetry, ballads, the mystery and morality plays, *Pliers Plowman*, the Pearl Poet and Sir Thomas Malory.
Category 2.

EN 204 Medieval Comparative Literature

Ideas of medieval Christianity, courtly love, and chivalric honor as they appear in *The Song of Roland*, Arthurian romances, the Grail legend, the story of Tristan and Iseult, *The Romance of the Rose*, troubadour lyrics, and *The Divine Comedy*.
Category 2.

EN 206 The Renaissance

Prerequisite: En 120.
The non-dramatic literature of Tudor England; emphasis on More, Wyatt, Sidney, Spenser, and the earlier works of Shakespeare, Donne, and Bacon.
Category 2.

EN 208 Seventeeth-Century Literature

Prerequisite: Completion of freshman year.
Prose and poetry of the era with special attention to the major works of Jonson and Donne.
Category 2.

EN 210 Eighteenth-Century Literature

Prerequisite: EN 120.
The major figures of the Enlightenment with particular emphasis on neo-classicism: Dryden, Pope, Swift, Johnson, and Boswell.
Category 2.

EN 212 The English Novel of the Eighteenth Century

Prerequisite: Completion of freshman year.
Purpose, range, and developments in the novel of the eighteenth century: Defoe, Richardson, Fielding, Smollett, Sterne, and others.
Category 2.

EN 214 The English Novel of the Nineteenth Century

Prerequisite: Completion of freshman year.
Representative nineteenth-century novelists: Austen, Bronte, Dickens, Thackeray, Eliot, Hardy, Conrad, and others.
Category 2.

EN 216 The Modern British Novel.

Prerequisite: Completion of freshman year.
Selected works of major British novelists from 1900 through WWII: Joyce, Lawrence, Woolf, Forster among others.
Category 2.

EN 218 Romantic Literature

Prerequisite: Completion of freshman year.
Poetry and prose with special emphasis on the poetry of Wordsworth, Coleridge, Shelley, Byron, and Keats.
Category 1.

EN 220 Victorian Poetry

Prerequisite: Completion of freshman year.
Emphasis on Tennyson, Browning, Arnold, and Swinburne as thinkers and stylists; readings in Rossetti, Hopkins, Housman, Hardy, and others.
Category 2.

EN 224 Continental Novelists I

Prerequisite: Completion of freshman year.
European novelists of the nineteenth and twentieth centuries including Dostoyevsky, Mann, Camus, and others.

EN 226 Continental Novelists II

Prerequisite: Completion of freshman year.
An examination of later works by authors studied in Continental Novelists I.
Category 2.

EN 228 Major Russian Authors

Prerequisite: Completion of freshman year.
The principal writings of the Russian masters of drama, fiction, and poetry: Tolstoy, Dostoyevsky, Chekhov, Pushkin, and Turgenev.
Category 3.

EN 230 Modern Drama

Prerequisite: Completion of freshman year.
The theories and development of realism, naturalism, expressionism, folk drama; representative plays from Ibsen to O'Neill.
Category 1.

EN 232 Contemporary Drama

Prerequisite: Completion of freshman year.
The dramatic works and aesthetics of Beckett, Pinter, and other selected dramalists of the contemporary theatre.
Category 1.

EN 234 Modern Poetry

Prerequisite: Completion of freshman year.
Close analysis of the development of British and American poetry from the late nineteenth century to World War II.
Category 2.

EN 236 Contemporary Poetry

Prerequisite: Completion of freshman year.
Concentrates on poets whose major work was written after World War II; special attention to authors presently writing and publishing.
Category 2.

EN 238 Contemporary Novel

Prerequisite: Completion of freshman year.
American and English novels after World War II, with emphasis on living novelists.
Category 2.

EN 240 Contemporary Literature

A survey of the major trends in twentieth-century poetry, drama, and fiction.

EN 242 The American Novel I

Prerequisite: Completion of freshman year.
The American novel from its origin to 1890; Brown, Cooper, Melville, Hawthorne, and others.
Category 2.

EN 244 The American Novel II

Prerequisite: Completion of freshman year.
The American novelists from 1890 to World War II: Crane, Wolfe, Dreiser, Anderson, Hemingway, Steinbeck, and others.
Category 2.

EN 251 Advanced Expository Writing

Prerequisite: EN 102 or CLEP exemption.
Instruction and practice in writing expository essays. Analysis of selected readings on a common theme or subject area.
Category 1.

EN 252 Technical Writing

Prerequisite: EN 102.
Focuses on how to write and produce basic documents, from research and progress reports to brochures and manuals.
Category 1.

EN 253 Business Communications

Prerequisite: Open to Business Administration majors only.
A consideration of accepted business communication conventions: correspondence, memoranda, survey reports, proposals, interim reports, and project reports.
Category 1.

EN 254 Critical Writing

Prerequisite: Consent of instructor.
Critical examination of English prose style; class reports; practice in the writing of analytical papers.
Category 2.

EN 256 Creative Writing: Prose I

Prerequisite: Consent of instructor.
An opportunity to develop the student's writing ability and critical sense; work of students and professional authors will be analyzed.
Category 1.

EN 258 Creative Writing: Prose II

Prerequisite: Consent of instructor.
A continuation of EN 256; offers instruction in composing various types of prose fiction.
Category 2.

EN 260 Creative Writing: Poetry I

Prerequisite: Consent of instructor.
Developing the student's skill in the creation of poetry; attention to contemporary trends in American Poetry.
Category 1.

EN 262 Creative Writing: Poetry II

Prerequisite: Consent of instructor. EN 260 not required.
Conversation with practicing poets; preparation of small booklet of poems.
Category 1.

EN 264 Journalism and Mass Communications

Prerequisite: Completion of freshman year.
Study of major forms of journalistic writing in relation to the background, issues, trends, and impact of

the American press.
Category 2.

EN 266 Journalism — Practice and Technique

Prerequisite: Completion of freshman year.
Training in developing, reporting, writing and editing straight news, feature, profile, and interpretive stories.
Category 1.

EN 267 Journalism: Advanced Newswriting

Prerequisite: EN 266 or consent of instructor.
Provides advanced training in the development and writing of straight news stories.
Category 1.

EN 268 Journalism: Feature Writing

Prerequisite: EN 266 or consent of instructor.
Provides advanced training in finding, researching, developing, and writing feature stories for newspapers and magazines.

EN 269 Journalism: Interpretive Reporting

Prerequisite: EN 266 or consent of instructor.
Provides advanced training in developing and writing profiles and interpretive stories.

EN 270 Journalism: Editing

Prerequisite: EN 266 or consent of instructor.
Prerequisite: Training in copy selection, copy editing, story placement, headline writing, layout, and use of style books.

EN 271 Journalism Workshop

Prerequisite: Consent of instructor.
Provides lab sessions in all aspects of journalism for advanced writers; emphais on publication.

EN 280 History of Literary Criticism

Prerequisite: Completion of freshman year.
An historical introduction to speculation concerning the nature and function of literature; selections from Plato to Frye.
Category 2.

EN 282 History of the English Language

Prerequisite: Completion of freshman year.
A study of the origins of the English language from Old English through Middle English to the present.
Category 2.

EN 284 Development and Character of the English Language

Prerequisite: EN 102.
Provides a fundamental knowledge of the development and present character of the English language.
Category 2.

EN 310 Chaucer

Prerequisite: Completion of freshman year
A study of the development of Chaucer's versatile art and writings as expressive of the later Middle Ages.
Category 1.

EN 320 Shakespeare I

Prerequisite: Completion of freshman year.
Major plays; required of all English majors.
Category 1.

EN 322 Shakespeare II

Prerequisite: Completion of freshman year.
A continuation of EN - 320 which will include the sonnets and less familiar plays.
Category 2.

EN 324 Elizabethan and Jacobean Drama

Prerequisite: Completion of freshman year.
A critical analysis of plays by the contemporaries of Shakespeare: Kyd, Marlowe, Greene, Jonson, Ford, Webster, and others.
Category 3.

EN 330 Milton

Prerequisite: Completion of freshman year.
A study of Milton's work from early poems to *Paradise Lost, Paradise Regained,* and *Samson Agonistes;* includes some prose pamphlets.
Category 2.

EN 332 The English Theatre: 1660-1780

Prerequisite: Completion of freshman year.
A survey of plays of the Restoration period and the eighteenth century; genres of comedy and tragedy.
Category 3.

EN 370 The Irish Literary Revival.

Prerequisite: Completion of freshman year.
The Irish literary renaissance; the origins of the movement: Joyce, Yeats, Synge, O'Casey, Lady Gregory, and others.
Category 2.

EN 400 Seminar

Prerequisite: Completion of freshman year; consent of instructor.
Student presentations on individual figures and particular problems in literature.
Category 1.

EN 410 Writing Practicum

Prerequisite: Consent of instructor.
Training and practice in one-to-one assistance for students' writing for any course, stage, or specific need.
Category 1. 3-6 credits (one or two semesters)

EN 425 Independent Study in English

An opportunity for further study in a special field of interest under faculty supervision.
Category 1. 1-3 credits.

EN 450 Special Topics in Literature

Prerequisite: Consent of instructor.
Specific content will vary in response to particular student and faculty interests.
Category 1.

EN 475 Internship in English

Prerequisite: Consent of department.
Provides majors the opportunity to gain practical experience in areas where they may apply acquired critical and writing skills.
Category 1. 3-6 credits.

GRADUATE COURSES

EN8 - 110 Approaches to the Literary Experience

An introduction to practical criticism which applies a broad spectrum of critical approaches to a selected group of literary examples.

EN8 - 112 History of the English Language

An examination of the phonology, syntax, and lexicon of English from its proto-Indo-European origins to its contemporary dialects.

EN8 - 115 Introduction to Literary Research

Examines basic and specialized library sources, representative types of interpretive writing illustrating methods of analysis applicable to works of literature.

EN8 - 120 Techniques of Creative Writing

An advanced writer's workshop for students who have taken previous creative writing courses or who have a substantial portfolio of fiction or poetry.

EN8 - 121 Principles of Journalism

An examination of the underlying nature of journalistic communication and the development of a critical awareness of journalistic writing.

EN8 - 122 Techniques of Journalism

Practical instruction in the preparation of various types of news writing, development of journalistic style, reporting, interviewing, and editing.

EN8 - 250 Literature and Social Change

A survey of literary works which examine social problems from the time of Swift to the present.

EN8 - 390 Special Problems in Literature

Designed to provide a flexible response to student and faculty concerns and interests not anticipated in the overall graduate program.

EN8 - 420 Poe, Hawthorne, Melville

Concentrates on the three great American novelists of the nineteenth century who followed the Romantic impulse into its dark underside.

EN8 - 520 Edgar Allan Poe: Selected Writings

An examination of the poems, stories, and literary criticism of Edgar Allan Poe.

EN8 - 610 Seminar in William Butler Yeats

An appraisal of W.B. Yeats's major poems and plays, with some attention to his essays.

EN8 - 760 The Worlds of Charles Dickens

Major aspects of the life and art of Dickens will be examined in a variety of contexts.

EN8 - 840 Modern Poetry

A study of the major figures who shaped American and British poetry between 1910 and 1950.

EN9 - 111 History of Literary Criticism

The development and implications of literary criticism from the time of Plato and Aristotle to the present.

EN9 - 113 Linguistics

A study of the phonological, syntactical, and semantic dimensions of language as revealed by traditional structural, and transformational-generative grammarians.

EN9 - 400 The Colonial Experience in American Literature

A study of seventeenth- and eighteenth-century American literature from its Puritan origins to Benjamin Franklin.

EN9 - 430 The Romantic Flowering in American Literature

The development of Romantic idealism in the origins of American fiction and poetry.

EN9 - 450 Realism and Naturalism

Realism as practiced by Twain and clarified by Howells, following the transition of realism to naturalism under Norris and Dreiser.

EN9 - 460 The American Novel of the Twentieth Century

This course begins with the American naturalistic novel and ends with the latest fiction of the century.

EN9 - 510 Medieval Literature

An examination of the most significant literary works of the Middle English Period (1100-1500).

EN9 - 520 The Drama to 1642

English drama from its beginnings to 1642, including works by Marlowe, Jonson, Middleton, Webster, Tourneur, and other contemporaries of Shakespeare.

EN9 - 530 The Renaissance

The intellectual influential literature of the sixteenth century: Pico Mirandola, Machiavelli, More, Erasmus, Wyatt, Surrey, Sidney, and Spenser.

EN9 - 560 Shakespeare I

Comedies and history plays.

EN9 - 562 Shakespeare II

An examination of the major tragedies.

EN9 - 570 The Seventeenth Century

Donne, the Metaphysical poets, Jonson and the Cavalier poets, (excluding the drama and epic).

EN9 - 600 The Development of the Novel

A consideration of the development of the gentre through the works of several of its major practitioners.

EN9 - 650 The Age of Reason

Major literary works of England from the Restoration (1660) to the American Revolution.

EN9 - 710 The Nineteenth-Century English Novel

Readings will include selections from the novels of Austen, Thackeray, Dickens, Eliot, Hardy, Conrad and others.

EN9 - 720 Romantic Poetry I: Blake, Wordsworth, Coleridge

Readings in the major "first-generation" Romantics with close attention to the definition of Romanticism.

EN9 - 725 Romantic Poetry II: Shelley, Byron, Keats

The second phase of the Romantic revolution is examined with attention to changes in the theory and practice of poetry.

EN9 - 770 Victorian Poetry

Majors poets of the period: Tennyson, Browning and Arnold.

EN9 - 820 Modern British Literature

The major prose fiction of the period: Joyce, Lawrence, and others. Some attention to related contributions in the other genres.

EN9 - 870 Modern Drama

A survey of British, American, Irish, and continental drama from Ibsen through O'Neill.

EN9 - 900 Seminar

Provides the opportunity for the student to explore the works of one or two major authors in depth.

Foreign Languages

UNDERGRADUATE COURSES

FL/ARB 100 Elementary Arabic I

Introduction to reading and writing modern, standard, and classical Arabic.
Category 1.

FL/ARB 101 Elementary Arabic II

Continuation of Elementary Arabic I for students who have had the prior course or its equivalent.
Category 1.

FL 110 Introduction to International Understanding

Culture, culture shock, cross-cultural mini-dramas, nonverbal communication, culture capsules, and assimilators are studied to guide students in their approach to unfamiliar cultures. Examples from various cultures in the course, in the community, on campus, and French and Spanish cultures.
Category 2.

FL 201 Introduction to Linguistics

Traditional and contemporary theories of phonetics, grammar, semantics, semiotics, psychology, and sociology of language. Illustrations mostly from English.
Category 1.

FL 400 Internship in Foreign Languages

Prerequisite: Consent of department.
Completion of a written foreign language project by students assigned to various private and public agencies. Dual supervision by agency and faculty.
Category 1.

FL 425 Independent Study in Foreign Languages

Prerequisite: Consent of instructor.
Study of special topic in French, Spanish, or other foreign languages, designed to provide study of a special field not presented in course offerings.
Category 1.

FRENCH

FR 101 Introduction to French Language and Culture I

Fundamentals of spoken and written French with a broad survey of French culture.
Category 1.

FR 102 Introduction to French Language and Culture II

Continuation oif FR 101.
Category 1.

FR 103 Beginning French I

Fundamentals of pronunciation, patterns of speech, basic structures. Uses oral-visual methods. Develops reading and writing skills.
Category 1.

FR 104 Beginning French II

Continuation of FR 103.
Category 1.

FR 210 Intermediate French I

Prerequisite: FR 104, or equivalent.
Review of grammar, verb structure, written and oral composition, selected readings and comprehension exercises.
Category 1.

FR 211 Intermediate French II

Prerequisite: FR210 or equivalent.
Continuation of FR 210.
Category 1.

FR 214 Intermediate French I: Reading and Translation

Prerequisite: FR 104 or equivalent.
Continuation of FR 210.
Category 2.

FR 215 Intermediate French II: Reading and Translation

Prerequisite: FR 214 or equivalent.
Continuation of FR 214.
Category 2.

FR 216 Intermediate French I: Conversation

Prerequisite: FR 104 or equivalent.
Conversational patterns, idioms, dialogues, special vocabularies for travel and occupations.
Category 1.

FR 217 Intermediate French II: Conversation

Prerequisite: FR 216 or equivalent.
Continuation of FR 216.
Category 1.

FR 321 Advanced French

Prerequisite: Two FR 200 - level courses.
Intensive review of grammar, practice in translation and composition. Conducted in French.
Category 3.

FR 322 Introduction to French Phonetics

Prerequisite: Two FR 200 - level courses.
Theory and practice in French sound system: clinical approach.
Category 3.

FR 323 French Conversation and Composition

Prerequisite: Two FR 200 - level courses.
Pronunciation and comprehension exercises, discussions, practice in paragraph, essay and letter writing.
Category 3.

FR 324 Advanced French Conversation

Prerequisite: FR 321 or FR 323.
Development of fluency and accuracy, free discussions, prepared oral presentations, practical exercises in oral expression.
Category 3.

FR 325 Advanced French Composition

Prerequisite: FR 321 or FR 323.
Fine points of French grammar, essays, reports, practical correspondence: English to French translation.
Category 3.

FR 331 General French Civilization

Prerequisite: Two FR 200 - Level courses.
Significant aspects of French history, geography, cultural achievements to World War. I.
Category 3.

FR 332 Contemporary French Civilization

Prerequisite: Two FR 200 - level courses.
French arts, politics, society since World War I.
Category 3.

FR 333 The French in America

Prerequisite: Two FR 200 - level courses.
A broad historical - cultural survey of the French presence in America from the explorations of Champlain and Cartier to modern times.
Category 3.

FR 341 Introduction to French Literature

Prerequisite: Two FR 200 - level courses.
Major periods and genres of French literature; for majors and minors.
Category 3.

FR 342 Medieval and Renaissance French Literature

Prerequisite: Two FR 200 - level courses.
Selections from the epic, theater, lyric poetry and the major prose writers.
Category 3.

FR 343 French Literature of the Seventeenth Century

Prerequisite: Two FR 200 - level courses.
Major authors of the classical period with emphasis on Corneille, Moliere and Racine.
Category 3.

FR 344 Eighteenth Century French Literature

Prerequisite: Two FR 200 - level courses.
Major works of Montesquieu, Voltaire, Diderot, Rousseau and a representative play and novel.
Category 3.

FR 345 Nineteenth Century French Literature

Prerequisite: Two FR 200 - level courses.
Major authors of the romantic, realist, and symbolist movements.
Category 3.

FR 346 Twentieth Century French Literature

Prerequisite: Two FR 200 - level courses.
Major novelists, dramatists and poets from the turn of the century to the present.
Category 3.

FR 401 Seminar in French Studies

Prerequisite: For advanced students.
Special topics in French language, literature or civilization.
Category 3.

FR 402 Independent Study in French

Prerequisite: See description.
Study of a special topic. Both content and eligibility subject to departmental guidelines and approval.
Category 1.

FR 475 Internship in French

Prerequisite: Consent of instructor and department.
Provides majors practical experience in areas where their refined speaking, reading, and writing skills may be applied.
Category 1.

GERMAN

GN 101 Beginning German I

Fundamentals of structure, speech patterns, pronunication, reading and writing.
Category 3.

GN 102 Beginning German II

Prerequisite: GN 101.
Continuation of GN 101.
Category 3.

GN 210 Intermediate German I

Prerequisite: GN 102 or equivalent.
Review of fundamentals; presentation of more complex stylistic features of German; selected introductory readings as an introduction to culture, conversation, composition.
Category 3.

GN 211 Intermediate German II

Prerequisite: GN 210 or equivalent.
Continuation of GN 210.
Category 3.

SPANISH

SP 101 Fundamental Spanish I

Basic oral and written proficiency for daily communication; may be taken as a self-contained unit or as a basis for further development. Audio-visual method.
Category 1.

SP 102 Fundamental Spanish II

Prerequisite: SP 101 or equivalent.
Continuation of SP 101.
Category 1.

SP 210 Intermediate Spanish I: Conversation

Prerequisite: SP 210 or equivalent.
Continuation of SP 210.
Category 1.

SP 211 Intermediate Spanish II: Conversation

Prerequisite: SP 210 or equivalent.
Continuation of SP 210.
Category 1.

SP 212 Intermediate Spanish I

Prerequisite: SP 102 or equivalent.
Recommended for majors. Reading, translation and intensive review of grammar and structure of language; introduction to Spanish literature.
Category 1.

SP 213 Intermediate Spanish II

Prerequisites: SP 210 and 212 or equivalent.
Continuation of SP 212.
Category 1.

SP 321 Advanced Spanish Composition I

Prerequisite: Two SP 200 - level courses.
Facility in prose writing: study of style of selected authors; variety of expression through word discrimination.
Category 3.

SP 322 Advanced Spanish Composition II

Prerequisite: SP 321 or equivalent.
Continuation of SP 321.
Category 3.

SP 323 Spanish Conversation I

Prerequisite: Two SP 200 - level courses.
Intensive conversational practice for improving intonation, pronunciation, fluency; review of language usage: introduction to phonetics.
Category 3.

SP 324 Spanish Conversation II

Prerequisite: SP 323 or equivalent.
Continuation of SP 323.
Category 3.

SP 331 Spanish Civilization

Prerequisite: Two SP 200 - level courses.
Spanish social, cultural, political life.
Category 3.

SP 332 The Hispanic World Today I

Prerequisite: Two SP 200 - level courses.
Social, economic and political institutions, value systems and customs. Conducted in Spanish.
Category 3.

SP 333 The Hispanic World Today II

Prerequisite: Two SP 200 - level courses.
Continuation of SP - 332.
Category 3.

SP 341 Readings in Spanish Literature

Prerequisite: Two SP 200 - level courses.
Selected masterpieces from Middle Ages to present; social, cultural, stylistic features of different periods. Recommended as a first course in Spanish literature.
Category 3.

SP 342 Masterpieces of Spanish Literature of the Middle Ages

Prerequisite: Two SP 200 - level courses.
Selections from the epic, theater, lyric poetry and major prose writers.
Category 3.

SP 343 Literature of the Spanish Renaissance

Prerequisite: Two SP 200 - level courses.
Works of the idealistic and realistic literary currents in narrative prose: caballaresque, pastoral, picaresque novels.
Category 3.

SP 344 Cervantes

Prerequisite: Two SP 200 - level corses.
The *Quijote,* selected *Novelas ejemplares.*
Category 2.

SP 345 Seventeenth-Century Drama

Prerequisite: Two SP 200 - level courses.
Lope de Vega, Tirso de Molina, Calderon and other major dramatists of the age. History of the 17-century Spanish drama and introduction to Spanish versification.
Category 2.

SP 346 Nineteenth-Century Spanish Literature: Romanticism

Prerequisite: Two SP 300 - level courses
Poetry, essay, drama and novel of the Peninsular Romantic period.
Category 3.

SP 347 Nineteenth-Century Spanish Literature: The Novel

Prerequisite: Two SP 200 - level courses.
Development of the nineteenth century novel; selected works of Valera, Galdos and others.
Category 3.

SP 348 Contemporary Spanish Literature

Prerequisite: Two SP 200 - level courses
Literary works from the generation of 1898 to the present.
Category 2.

SP 349 Spanish-American Literature

Prerequisite: Two SP 200 - level courses
Representative works from South and Central American authors from the colonial period to the present.
Category 2.

SP 401 Advanced Study: Special Topics

Prerequisite: For advanced students.
Special topics in language, literature, civilization or field work of mutual interest to student and instructor.
Category 3.

SP 402 Independent Study in Spanish

Prerequisite: See description.
Study of a special topic. Both content and eligibility are subject to departmental guidelines, approval.
Category 1.

SP 475 Internship in Spanish

Prerequisite: Consent of instructor and department.
Provides majors practical experience in areas where their refined speaking, reading, and writing skills may be applied.
Category 1.

GRADUATE COURSES

SP8 - 110 Fundamental Spanish II

Prerequisite: SP8 - 100 or equivalent.
Continuation of SP8 - 100.

SP8 - 120 Spanish for Community Personnel I

Designed for municipal and community personnel who, in their daily work, must communicate with Spanish-speaking people.

SP8 130 Spanish for Community Personnel II

Prerequisite: SP8 - 120 or equivalent.
Continuation of SP8 - 120.

SP8 - 200 Intermediate Spanish I

Prerequisite: SP8 - 110 or equivalent.
Offered to those who wish to establish better communication and understanding with Spanish-speaking people.

SP8 - 210 Intermediate Spanish II

Prerequisite: SP8 - 200 or equivalent.
Continuation of SP8 - 200.

SP8 - 310 Conversational Spanish Workshop

Prerequisite: SP8 - 210 or equivalent.
Intensive oral communication practice conducted between intermediate and advanced levels of proficiency. Selective review of grammar.

SP8 - 311 Advanced Spanish Conversation I

Prerequisite: SP8 - 210 or equivalent.
Advanced conversational practice to improve fluency and naturalness in the use of everyday language and the development of vocabulary.

SP8 - 312 Advanced Spanish Conversation II

Prerequisite: SP8 - 311 or equivalent.
Continuation of SP8 - 311.

SP8 - 313 Spanish Composition and Communication I

Prerequisite: SP8 - 210 or equivalent.
Facility in prose writing; mastery of complex grammatical problems; stylistic analysis of selected exercises in literary extracts.

SP8 - 314 Spanish Composition and Communication II

Prerequisite: SP8 - 313 or equivalent.
Continuation of SP8 - 313.

SP8 - 320 Spanish Summer Institute

Prerequisite: SP8 - 110 or equivalent.
Established to improve language abilities in combination with the study of Spanish culture. Formal classes are supplemented with activities.

SP8 - 321 The Hispanic World Today

Prerequisite: SP8 - 312 or equivalent.
Social, economic, and political institutions of Latin America; collective assumptions, value systems and customs. Classes conducted in Spanish.

SP8 - 322 Contemporary Spain

Prerequisite: SP8 - 312 or equivalent.
The first Spanish country to cross the line between developing and developed countries, with concomitant cultural changes. Classes conducted in Spanish.

SP8 - 323 History and Culture of Puerto Rico.

Prerequisite: SP8 - 312.
An in-depth study of the country as in SP8 - 321.

SP8 - 324 The Latin Americans in USA

Prerequisite: SP8 - 312.
Their origins, distribution, sociocultural organizations and attitudes. Special attention to the Spanish-speaking community of the area. Classes conducted in Spanish.

SP8 - 325 Travel Study Course

Prerequisite: SP8 - 312.
Trip will be preceded by a seminar. Classes conducted in Spanish.

SP9 - 326 Seminario Intercultural de Estudios Hispano-Americanos

Prerequisite: SP8 - 312 or equivalent.
A contrastive study of Hispanic and American culture and personality and survey of different methodologies to teach culture. Classes conducted in Spanish.

SP9 - 330 Spanish Novel of the Nineteenth and Twentieth Centuries

Prerequisite: SP8 - 312 or equivalent.
A study of the most representative novelists of the nineteenth and twentieth centuries in Spain. Classes conducted in Spanish.

SP9 - 331 Latin American Novel of the Nineteenth and Twentieth Centuries

Prerequisite: SP8 - 312 or equivalent.
A study of major figures in Latin American narrative. Classes conducted in Spanish.

SP9 - 332 Hispanic Theatre

Prerequisite: SP8 - 312 or equivalent.
Main trends in peninsular and Latin American drama. Classes conducted in Spanish.

SP9 - 333 Contemporary Spanish Novel

Prerequisite: SP8 - 312 or equivalent.
Study of several important novelists of post-Civil War Spain; their perception of present-day Spanish society. Classes conducted in Spanish.

SP9 - 334 Contemporary Latin American Novel

Prerequisite: SP8 - 312 or equivalent.
A selective survey of the Latin American novel since World War II. Classes conducted in Spanish.

SP9 - 335 Literature of Spanish Golden Age

Prerequisite: SP8 - 312 or equivalent.
Works representative of the ideological and aesthetic currents of the Spanish Golden Age. Classes conducted in Spanish.

SP9 - 400 Independent Study in Spanish.

Prerequisite: Consent of the coordinator.

Geography and Geology

UNDERGRADUATE COURSES

GE 101 Physical Geography: The Physical Environment

Geographic principles of location; characteristics of landforms, soil, climate, minerals, water, flora, and fauna.
Category 1.

GE 102 Cultural Geography: The Cultural Environment

Man-related relationships, settlement patterns, problems related to urbanization, pollution, conservation, and patterns of change.
Category 1.

GE 110 World Regional Geography I

This survey examines characteristics of land and peoples of Europe, the Middle-East, and the USSR with emphais on landscapes and cultures.
Category 3.

GE 111 World Regional Geography II

Analysis of the physical, cultural and economic regions of the Orient, Asia, Africa, Australia and the Americas.
Category 3.

GE 120 Introduction to Geology

Introduction to geological science; rocks and minerals, internal forces and crustal structures, effects of glaciers, and other surface processes.
Category 1.

GE 121 Physical Geology Lab

Prerequisite: GE 120 (may be taken concurrently).
Involves exercises in rock and mineral characteristics, topographic and geologic map interpretation, air photo analysis, and local field study.
Category 1. 1 credit.

GE 210 Geography of North America

Manufacturing, agriculture and trade in the various regions of the continent. Land utilization as affected by the physical environment.
Category 1.

GE 220 Earth History

Prerequisite: GE 120
Historical evolution of the earth, its surface features and life forms through geologic time. Emphasis on the North American continent.
Category 2.

GE 225 Oceanography

The principles of physical, chemical, biological, and geological oceanography.
Category 1.

GE 230 Geography of Europe

European landforms, people, culture, economics and problems facing the individual countries.
Category 1.

GE 250 Hydrology

Physical, economic, political, and social problems in water resource planning are considered in a simulation context.
Category 2.

GE 260 Geography of South America

Physical, economic, social and cultural analysis of the individual countries; historical background to present-day development.
Category 2.

GE 270 Geography of Middle America

Prerequisites: GE 101, GE 102.
Present growth and trends in Middle America and the Caribbean realm as related to the landscape and culture of the people.
Category 2.

GE 280 Geography of Manufacturing

A systematic study of the spatial distribution of manufacturing activities; analysis of their locations employing industrial location theory.
Category 1.

GE 285 Economic Geography

Geographic factors contributing to the localization of economic activities are analyzed. Distribution, production, and trade are considered.
Category 2.

GE 290 Conservation and Natural Resource Management

Problems in resource management are analyzed from a physical, social, economic and political perspective. Theory and applied examples are considered.
Category 2.

GE 300 Problems in Energy Resources

Prerequisite: GE 101.
Contemporary problems of energy resources; emphasis on supply, demand, and availability of alternative energy resources.
Category 2.

GE 310 Geomorphology

Prerequisite: GE 101 or GE 120.
A study of landscapes and the natural forces that shape them. Influences of man's activities and role of climate stressed.
Category 2.

GE 311 Regional Geomorphology of the United States

Prerequisite: GE 120 or GE 310
Study of selected regions of our country with respect to underlying geology and resulting landscape features. Considerable map study included.
Category 2.

GE 315 Computer-Graphics

Prerequisite: BASIC or FORTRAN
Production of graphs and maps using line printer, Tektronix, and Apple equipment.
Category 1.

GE 316 Meteorology

Prerequisite: Consent of instructor.
Weather elements, frontal storms, air mass characteristics, winds, temperature, precipitation, and pressure patterns throughout the world; weather instruments; forecasting.
Category 1.

GE 320 Climatology

Prerequisite: GE 101.
Characteristics of the atmosphere; climates of the continents and classification of the world's climates.
Category 1.

GE 325 Glacial Geology

Prerequisite: GE 120.
Glaciers and their dynamics; investigation of the Quaternary Ice Age and its profound effects on world scenery.
Category 2.

GE 330 Geography of Asia

Prerequisite: Consent of instructor.
Physical and cultural environmental analysis; rapid changes, developments of recent origin, and problems facing the individual countries.
Category 1.

GE 340 Urban Geography: The Urban Environment

Prerequisite: GE 102.
World urbanization, location and central place concepts, economy of cities, land use patterns, urban physical and societal environmental problems.
Category 1.

GE 345 Geography of Africa

Prerequisite: Consent of instructor.
Africa divides into north Africa, Saharan Africa and southern Africa. This course studies lands, peoples, cultures, economics, political and future problems.
Category 1.

GE 350 Introduction to Urban and Regional Planning

Prerequisite: GE 102.
Understanding of purpose, function, tools and methodology of urban and regional planning; focus on land use planning, land use controls and model plans.
Category 2.

GE 351 Introduction to Cartography

Prerequisite: GE 101.
Theory and construction of maps, charts, and diagrams.
Category 1.

GE 352 Cartography and Geographic Techniques

Prerequisite: GE 351
Continuation of GE 351 with an emphasis upon statistical analysis.
Category 1.

GE 355 Land Use Planning Workshop

Prerequisite: Consent of instructor.
Students undertake a land-use planning project for a local community utilizing an ecological approach and environmental planning methodology.
Category 2.

GE 360 The Middle East: Its Changing Environments

Prerequisite: GE 102.
The Middle East: geography, society, economics and political structure.
Category 3.

GE 370 Political Geography

Prerequisites: GE 101, GE 102.
Space structures, growth, problems of a nation-state; modern world political problems.
Category 3.

GE 380 Computer Application for the Social Sciences

Prerequisite: GE 352 or basic course in statistics.
Use of the SPSS system of computer programs for use in the analysis of social science data.
Category 1.

GE 390 Geography of the USSR

Prerequisite: GE 101.
A study of the physical environments, regional economies, populations and cultural problems of a giant in a tri-partite world power play.
Category 1.

GE 450 Readings and Directed Research

Prerequisites: GE 101, GE 102, GE 210, GE 351, GE 352 and consent of department.
Directed study on selected topics; open to senior majors.
Category 1.

GE 460 Geography Internship

Prerequisites: All department requirements for major fulfilled and consent of department.
Students assigned to various government and private agencies under joint supervision of agency and faculty.
Category 3 1-6 credits..

GE 470 Selected Topics in Geography

Prerequisite: Consent of instructor.
Topic or subject to be announced in advanced; topic to be relevant to student needs and interest and availability of professor.
Category 2.

GRADUATE COURSES

GE8 - 105 Geologic Influences in the New England Landscape

Analysis of the geological backgrounds of New England's distinctive scenery. Includes study of bedrock base, glacial features, coastline, and mountains.

GE8 - 106 Central Mass. Geology Workshop

Chiefly a field investigation of nearby bedrock and landscape features. Survey of maps, literature, and other resources on local geology.

GE8 - 222 Man's Environment: The Earth's Crust

Surveys the new unifying model of evolution of the earth's crust embodied in continental drift, sea-floor spreading, and plate tectonics.

GE8 - 260 The Great Ice Age

Explores the many influences of the Quaternary Ice Age on our natural environment: landforms, soils, vegetation, animals, and early man.

GE8 - 290 Ecology and Conservation in American Society

The fundamental ideas in ecology and conservation in the United States.

GE8 - 315 The Drama of Weather

Weather elements, frontal storms, air mass characteristics, winds, temperature, precipitation, and pressure patterns throughout the world.

GE8 - 352 Quantitative Techniques in Geography

The study of the quantitative techniques of greography.

GE8 - 400 Geography of Wine

The cultivation of grapes and their manufacture into wine. Regional stress; Western Europe and the United States.

GE8 - 410 Contemporary Environmental Problems

A study of contemporary environmental problems.

GE8 - 415 Computer-Graphics

Prerequisite: BASIC or FORTRAN.
Production of graphs and maps using line printer, Tektronix, and Apple Equipment.

GE8 - 420 Economic Geography

Geographic factors contributing to the localization of economic activities; distribution, production and trade.

GE8 - 430 Geography of Urban Environment

World urbanization, location and central place concepts, economy of cities, land-use patterns, urban physical and societal environmental problems.

GE8 - 441 Land-Use Planning Workshop

Workshop in land-use planning.

GE8 - 455 Industrial Geography

Industrial concentrations and patterns on the earth's surface.

Health Science

UNDERGRADUATE COURSES

HE 100 Personal Health

Physical, mental, and emotional aspects of one's well-being and how to maintain and increase the quality of self-life style.
Category 1.

HE 110 Drugs and Society

Drug use and abuse, and implications for personal, family, and societal choice.
Category 1.

HE 120 Health and Nutrition

Nutritional needs, weight control, healthy diets, myths, and nutritional aids to better health.
Category 1.

HE 130 Human Sexual Awareness

The processing of feelings of self as a sexual person and applications to individual lifestyles.
Category 1.

HE/PE 140 Introduction to Creative Arts Therapies

An experiential and didactic introduction to the separate arts therapies: movement, art, music and language arts emphasizing the creative process.
Category 3.

HE 200 Consumer Health

Prerequisite: HE 100.
Current information and guidelines to reliable sources necessary to develop intelligent consumers capable of wisely selecting health products and services.
Category 1.

HE 210 Feminist Health

An introduction to the connection between the status of women in society and their health.
Category 2.

HE 220 Mental Health Education

Prerequisite: HE 100.
Examination of mental health as a variable, its creation and the obstacles to good mental health; development of positive self-concept.
Category 2.

HE 230 Human Sexuality and Sex Education

Prerequisites: HE 100, HE 130.
Focus on the need for and understanding of sex education, along with the process of implementing sexuality education, with emphasis upon teacher preparation.
Category 3.

HE/PE 260 First Aid: Advanced Theory and Skill

Common emergencies, cardiopulmonary resuscitation, auto extraction, and emergency childbirth. Opportunity for instructor rating.
Category 3.

HE/PE 275 Fitness for Life

Knowledge of health-related fitness components and their effect on total wellness; emphasis on developing personalized fitness program, namely cardiovascular endurance.
Category 1.

HE/PE 280 Individualized Stress Management and Relaxation

Knowledge of the causes, symptoms and related disorders of stress; emphasis on techniques of stress reduction through meditation, exercise, etc.
Category 1.

HE 300 Values Clarification

Prerequisite: HE 100.
Examination of values which guide our health/wellness decisions and behaviors.
Category 3.

HE 310 Group Processing

Prerequisite: HE 100.
Consideration of the process of dynamics forming the emotional, relational, and other components of health-producing group behavior.
Category 3.

HE 320 Aging and Death

Prerequisite: HE 100.
Health implications revealed as psychological and social surrounding the phenomena of aging and death.
Category 2.

HE 340 Health Counseling

Prerequisites: HE 100, HE 130, HE 310.
A study of the counseling implications involved in health. Awareness of the counseling process and referral.
Category 2.

HE 350 Community Health Education

Prerequisite: Advanced standing.
Opportunity for exploration of ongoing community health education programs, and their impact upon that community.
Category 3.

HE 360 Strength Training

Prerequisite: Advanced standing.
Identification of strengths and weaknesses in teaching and interpersonal relationships.
Category 3.

HE 370 Critical Issues in Health

Prerequisite: Advanced standing.
An examination of the most current critical issues in health.
Category 3.

HE 380 Teaching Methods and Skills in Health

Prerequisite: Advanced standing.
Focus on the role and responsibility of the classroom teacher as a major force in the creative teaching-learning environment.
Category 3.

HE 390 Environmental Health

Prerequisite: HE 100.
Nature and effects of health hazards including radiation, noise, pollutants (air, water), food, housing, accidents, etc.
Category 3.

HE 400 Departmental Workshop

Prerequisite: Consent of instructor.
An eclectic course that will bring to the department the most important issues that relate to health and health care.
Category 2.

HE 440 Practicum in Health

Prerequisite: Advanced standing.
A field experience option required of all Health Studies majors.
Category 1.

HE 450 Independent Study in Health

Prerequisite: Advanced standing.
Creative, independent learning experiences designed and initiated by the student.
Category 1. 1-3 credits.

GRADUATE COURSES

HE8 - 005 Women and Their Sexuality

A examination of the physical, social, emotional, and sexual aspects of women's roles.

HE8 - 100 Philosophy of Health

Emphasis on the development of a personal philosophy of health within the context of philosophy and health.

HE8 - 110 Research in Feminish Health

Various women's health issues will be researched relating to the effects of sexism on women's lives past, present and future.

HE/PE8 - 115 Introduction to Creative Arts Therapies

An experiential and didactic introduction to the separate art therapies: movement, art, music, and language arts emphasizing the creative process.

HE8 - 120 Nutrition and Health

Fundamental principles of human nutrition with emphasis on physiological and chemical bases for nutrient needs.

HE8 - 125 Drug Awareness

Feelings and values, and how these influence choices and decisions about drug use and abuse.

HE8 - 130 Human Sexual Awareness

Emphais on facing and making choices about sex and sexuality through self-understanding and acceptance.

HE8 - 200 Personal Health

A conceptual approach to the physical, mental, social and spiritual dimensions underlying one's health and wellness.

HE8 - 210 Consumer Health

The consumer of health-care products and services, and how to make wise choices and decisions.

HE/PE8 - 250 Stress Management

Assessment of personal stressors, causes, and symptoms of stress and related disorders; emphasis on intervention and management techniques.

HE8 - 260 Human Sexuality and Sex Education

In-depth understanding of human sexuality, and the process involved for effective teaching of it.

HE8 - 275 Health Counseling

Development of an awareness of the significance of health counseling. Skills and knowledge useful in relating to people in counseling.

HE8 - 330 Values Clarification in Health Education

Presentation of a variety of activities, vignettes, and provocative questions and situations to help students think and learn about values.

HE8 - 350 Working with Groups

Critical examination of group behavior while developing leadership and facilitative competencies in group functioning for therapeutic growth and total health.

HE8 - 400 Mental Health Education

Investigation of mental health dynamics in the classroom and development of demonstrable techniques and methods to achieve positive individual and group health.

HE8 - 415 Aging and Death Education

The common human experiences of aging and death; understanding and developing skills related to grief counseling and crisis intervention.

HE9 - 100 Health Coordinator

Investigation of the skills necessary in developing, implementing, and coordinating a school health education program.

HE9 - 175 Creative Teaching in Health

Emphasis placed on creative aspects of teaching with a focus on values education; transpersonal education; affective education; etc.

HE9 - 200 Strength Training in Health

Workshop: to help participants learn to cope constructively with stressful situations commonly experienced in helping relationships.

HE9 - 300 Drugs, Alcohol, and Tobacco

The pharmacology of various drugs and their physiological effects.

HE9 - 500 Independent Study in Health

Open to graduate students who wish to develop an independent research project.

History

UNDERGRADUATE COURSES

HI 101 Western Civilization I

From the ancient civilizations to 1648. A study of Western development and tradition in that time period.
Category 1.

HI 102 Western Civilization II

From 1648 to recent times. A study of Western development and tradition in that time period.
Category 1.

HI 111 U.S. History I

From colonization through the Civil War era. A study of politics, society, economy, diplomacy, and culture in that period.
Category 1.

HI 112 U.S. History II

From the Civil War era to recent times. A study of politics, society, economy, diplomacy, and culture in that period.
Category 1.

HI 200 Colonial History I

Prerequisites: HI 111, HI 112.
European background and reasons for American colonization, intercolonial rivalries, formation of the 17th century English colonies, British colonial policy, to 1689.
Category 2.

HI 201 Colonial History II

Prerequisites: HI 111, HI 112.
Establishment of Georgia, French and Indian Wars, 18th century colonial civilization, causes of the American Revolution, the Revolution, to 1783.
Category 2.

HI 205 American Indian: Past and Present

The American Indian in history: the encounter between Indian and European civilizations; and the relationship of Indian culture to Indian history.
Category 2.

HI 206 A History of Warfare

An examination of the role of war in conflict resolution, great battles which changed history, and the impact of technology on war.
Category 2.

HI 207 American West: Myth and Reality

The historic development of the West, its impact on the American character, and a study of how myths became accepted "fact."
Category 2.

HI 208 American Immigrant History

Survey of immigration. Topics such as: old-world background, impact on U.S., nativism, cultural pluralism, religion, mobility, family and politics.
Category 1.

HI 209 Afro-American History

Prerequisite: HI 111, HI 112.
The role of blacks in American society from the seventeenth century to the present, emphasizing the institution of slavery.
Category 3.

HI 210 Psychological Foundations of Current History

An attempt to ascertain certain climates of opinion within which far-reaching decisions were both made and responded to.
Category 1.

HI /PO 211 History of U.S. Foreign Policy I

Colonial origins to the era of the Spanish-American War. The sources and development of U.S. foreign policy in that period.
Category 1.

HI /PO 212 History of U.S. Foreign Policy II

From 1900 to recent times: U.S. foreign policy traditions and the challenges of great power status.
Category 1.

HI 215 American Intellectual History

Prerequistie: HI 111 or HI 112.
Puritanism, the Enlightement, romanticism, Darwinsim, pragmatism, naturalism, fundamentalism, the liberal-progressive ethic, the new left, and neo-conservatism.
Category 3.

HI 216 Economic History of the U.S.

An introduction to United States economic development; particular attention will be paid to industrialization and the labor force.
Category 2.

HI 217 U.S. Social History

Survey of social and cultural history. Topics such as family, religion, education, popular literature, architecture, transportation, and reform.
Category 2.

HI/PO 218 U.S. Constitutional History I

The development of constitutional history as seen in decisions of the U.S. Supreme Court and their effects from 1789 to 1921.
Category 1.

HI/PO 219 U.S. Constitutional History II

Supreme Court decision-making since 1921: federal-state relations, civil liberties, civil rights, loyalty program, labor, rights of defendants.
Category 1.

HI 223 History of Modern France

Prerequisite: Completion of freshman year.

Domestic and foreign problems of ninetieth and twentieth-century France.
Category 2.

HI 224 English History I

Prerequisite: Completion of freshman year.
English history, from Roman Britain to 1688: the assimilation of the Anglo-Saxons with the Celts, the Norman Conquest, reign of Elizabeth I, Puritan revolt.
Category 2.

HI 225 English History II

Prerequisite: HI 224.
English history from the reign of William and Mary to the present. Focus will be on the expansion of the British Empire and the growth of industrialization.
Category 2.

HI 231 European Intellectual History I

Prerequisite: Completion of sophomore year.
The main theoretical works, philosophic, psychological and scientific from Plato to the eighteenth century.
Category 3.

HI 232 European Intellectual History II

Prerequisite: Completion of sophomore year.
The main theoretical works, philosophic, psychological and scientific of the nineteenth and twentieth centuries.
Category 3.

HI 233 History of Latin America

Prerequisite: One year of history or consent of instructor.
The Spanish Conquest, colonial institutions, wars of independence, and development of Mexico, Brazil and Argentina.
Category 3.

HI 234/HI 235 Russian History I and II

Prerequisite: One year of history.
A study of major political, economic, social, intellectual and diplomatic currents in Russia, from the Kievan era to Stalin.
Category 1. 6 credits.

HI 236/HI 237 Modern Far East History I and II

Prerequisite: Completion of freshman year.
Civilizations dramatically different from our own, focusing upon China, Japan, and Southeast Asia since 1600.
Category 1. 6 credits.

HI 241 English Constitutional History

Prerequisite: Completion of freshman year.
The development of English constitutional history and principles from the conquest by the Anglo-Saxons to 1776.
Category 1.

HI 242 History of Early Modern Europe

Forces that shaped Europe since the Reformation: the political, economic, and intellectual context of the external expansion as well as the external turmoils, such as the Thirty Years War and the European economy to 1789.
Category 2.

HI 243 European Urban History

The process of accelerating urbanization in Europe since the eighteenth century; cultural, social,

economic and political aspects of urban life.
Category 3.

HI 244 American Urban History

The process of accelerating urbanization in America since the nineteenth century; cultural social, economic, and political aspects of urban life.
Category 2.

HI 245 History of Modern Germany I

The origins and growth of Brandenburg-Prussia; their impact on the rest of Germany from the foundation of the Holy Roman Empire to the emergence of the Second Reich in 1871.
Category 1.

HI 246 History of Modern Germany II

German economic and political crises from 1870 to the present.
Category 1.

HI 249 U.S. Labor History I

Prerequisites: HI 111, HI 112.
The relationship between workers, their employers and the surrounding community between 1815 and World War II.
Category 2.

HI 250 U.S. Labor History II

Prerequisites: HI 111, HI 112.
Examines the American Labor movement from World War II to the present.
Category 2.

HI 251 Age of Jackson

Prerequisites: HI 111, HI 112.
Political, social, economic, and intellectual developments in the second quarter of the nineteenth century.
Category 3.

HI 252 Civil War and Reconstruction

Prerequisite: Consent of instructor.
Sectionalism, slavery, and modern industrial warfare as well as their impact on the political and racial fabric of America.
Category 2.

HI 253 The Age of Reform: 1877-1920

Prerequisite: Completion of freshman year.
An analysis of the transformation of America, including reform response to the Gildred Age's industrialization, urbanization and immigration patterns.
Category 2.

HI 254 Twentieth Century U.S. History

Prerequisites: HI 111, HI 112.
Contemporary American civilization from the Harding Administration into the post-World War II period.
Category 1.

HI 261 Middle East History I

The rise and expansion of Islam; the Caliphate; Muslim religion, civilization and impact on the West; decline of medieval Islam.
Category 2.

HI 262 Middle East History II

The Ottoman Empire; expansion; institutions; impact on Europe; decline of the Empire.
Category 2.

HI 300 The Early National Period of the U.S.: 1783-1829

Prerequisite: Consent of instructor.
The Confederation, Constitution, the emergency of political parties, and the rise of American nationality.
Category 3.

HI 305 Ancient History

Prerequisite: Completion of freshman year.
The history, culture, and politics of ancient Greece and Rome.
Category 2.

HI 306 Renaissance and Reformation

Prerequisite: Completion of freshman year.
Intellectual and cultural history of Europe from the middle of the thirteenth to the middle of the sixteenth century.
Category 3.

HI 307 The Age of the Bourbons

Prerequisite: Completion of freshman year.
Domestic and foreign problems of sixteenth-, seventeenth-, and eighteenth-century France.
Category 3.

HI 308 Europe in the Age of Revolution and Nationalism: 1789-1870

Prerequisite: Completion of freshman year.
The French Revolution, Napoleon, Congress of Vienna; nationalism, liberalism, socialism; Second French Empire; German and Italian unification.
Category 2.

HI 309 Diplomatic History of Modern Europe

Prerequisite: Completion of freshman year.
The foreign policies of the major European nations form 1870 to the present.
Category 2.

HI 310/PO 338 History of Political Theory I

Prerequisite: Completion of sophomore year or consent of instructor.
The development of political thought from the Greeks to the Enlightenment.
Category 2.

HI 311/PO 339 History of Political Theory II

Prerequisite: Completion of sophomore year or consent of instructor.
The development of political thought from the Enlightenment to the present.
Category 2.

HI 312 Twentieth Century Europe I

Prerequisites: HI 101 and HI 102.
The politics and economics of WWI; the pattern of restlessness between the wars in the rise of dictatorship in Germany, Italy, and Spain; the regimentation of economic control.
Category 1.

HI 313 Twentieth Century Europe II

Prerequisites: HI 101 and HI 102.
Politics and diplomacy of World War II; the dynamics of the rebirth of Europe since V-E Day. The effects of total war upon Europe.
Category 1.

HI 314 Twentieth Century Middle East History

Prerequisite: Completion of freshman year.
The Young Turk Revolution; division of Ottoman Empire in World War I; rise of new states; the Arab-Israeli conflict.
Category 1.

HI 315 Historical Quantification

Prerequisite: Completion of sophomore year.
Theoretical statistical procedures related to historical studies; use of the computer to manipulate and test these procedures.
Category 3.

HI 400 Independent Study in History

Prerequisite: Consent of department or instructor.
Special topics for advanced research and study under the guidance of a faculty member.
Category 1.

HI 410 American History and Historians

Prerequisite: Written consent of instructor.
Intensive study of original sources and preparation of a research paper; analysis of major schools of historical thought.
Category 3.

HI 420 Seminar in American Constitutional History

Prerequisite: Written consent of instructor.
Reading, research and discussion on a specially selected phase of American constitutional development; an original paper of significant scholarship is required.
Category 3.

HI 430 European History and Historians

Prerequisite: Written consent of instructor.
The study of Europe's major schools of historical thought with emphasis on how Europe's history has been written.
Category 3.

HI 440 Internship in American Studies

Prerequisite: Consent of instructor.
Internships in museums, archives, government agencies, etc. Performing a variety of tasks at beginning professional level in cooperating institutions.
Category 1. 6-12 credits.

GRADUATE COURSES

HI8 - 105 History of Western Law

The history of the development of law from the ancient Near East through Roman, Greek, medieval, and modern times.

HI8 - 120 The American Revolutionary Period and the Making of the Constitution: 1760-90.

Prerequisite: One year of U.S. history
The rise of revolutionary sentiment, military aspects of the Revolution itself, the Articles of Confederation, and the making of the federal constitution and Bill of Rights.

HI8 - 130 Civil War and Reconstruction

Sectionalism, slavery, and modern industrial warfare as well as their impact on the political and racial fabric of America.

HI8 - 140 Twentieth Century U.S. History

Contemporary American civilization from the Harding Administration to post-World War II.

HI8 - 150 U.S. History Since 1945

Domestic and foreign policy of the Truman, Eisenhower, Kennedy, Johnson, Nixon, and Ford administrations, and as far thereafter as time permits.

HI8 - 200 American Indian: Past and Present

The American Indian in history, the encounter between Indian and European civilizations, and the relationship of Indian culture to Indian history.

HI8 - 210 American Immigration History

Survey of immigration: old world background, impact on U.S., nativism, cultural pluralism, religion, mobility, family and politics.

HI8 - 212 History of the Cold War

The origins of the Cold War; American, Soviet and Chinese foreign policies; arms control negotiations and future prospects.

HI8 - 220 U.S. Constitutional History

Decisions of U.S. Supreme Court and their effects from 1789 to the present.

HI8 - 252 The Gilded Age: 1865-1900.

A depiction of the period when America went through a rapid socio-economic transformation in the areas of industrialization, urbanization, and immigration.

HI8 - 253 The Age of Reform: 1877-1920

A study of late nineteenth and early twentieth century America emphasizing reforms in response to Gilded Age industrialization, urbanization, and immigration.

HI8 - 310 Civil Liberties

Prerequisite: one year of U.S. history
American civil liberties as interpreted by the Warren-Burger Courts: religion, freedom of communication, association, peaceable assembly, rights of criminal defendants, the loyalty question.

HI8 - 315 Organized Labor: A Contemporary View

Examines the American labor movement from a historical perspective and its position in the United States today,

HI8 - 326 U.S. Foreign Policy in Transition: 1861-1920

A study of the changes in U.S. foreign policy from the proclamation of the Union blockade to the 1920 presidential election.

HI8 - 330 American-Russian Relations, 1781-Present

An analysis of American-Russian relations from their inception to the present, stressing the period since 1917.

HI8 - 335 U.S. and East Asia

An examination of the American role in East Asia, focusing upon American-Chinese relations, American-Japanese relations, and the Indochina conflict.

HI8 - 405 European International Politics, 1815-Present

An analysis of the foreign polcies of the major European nations, from 1870 to 1945.

HI8 - 410 History of Ireland I

Ireland since 432. Origins, course and growth of Irish civilization and problems with England since the landing of the Anglo-Normans.

HI8 - 415 History of Ireland II

A continuation of HI8 - 410; the second term continues an analysis of the politics and economics after the union with England in 1801.

HI8 - 600 Middle East History I

Prophet Mohammed and the rise of Islam; the Islamic religion; the Muslim-Arab civilization and impact on the West.

HI8 - 610 Middle East History II

The rise and expansion of the Ottoman Empire; governmental structure; impact on Europe; the decline of the Ottomans.

HI8 - 615 The Rise of the Contemporary Middle East

Analysis of the forces which shaped modern Middle East history; European imperialism after World War I; the struggle for Palestine.

HI8 - 650 Modern African History (Subsahara)

The major political, cultural, economic, and international aspects of the region from modern times through the present independence movements.

HI8 - 700 Japan in the Twentieth Century

An evaluation of the role of Japan as an emerging world power and economic giant during the present century.

HI8 - 785 The U.S. and the Middle East

Discusses growth of U.S. economic, cultural, political, and strategic interests in Middle East; emphasis on post-World War II period.

HI8 - 820 Civil-Military Relations

A study of the modern military establishment and its impact upon the political and social institutioins of various nations.

HI8 - 830 Political Terrorism in Historical Perspective

A comparative approach to the terrorist movements of the nineteenth and twentieth centuries, concentrating on the European groups.

HI9 - 100 The Study and Writing of History

Historical methodology, modern historiographical views and the emergence of the New History, i.e. psychohistory, family history, and quantitative history.

HI9 - 460 European Intellectual History from the Enlightenment to the Present

The major ideas of the era: utilitarian, nationalist, and socialist schools; fascism, communism and liberalism.

HI9 - 470 Modern France

Selected topics dealing with France from the Revolution to the present.

HI9 - 520 Russia in the Twentienth Century

An evaluation of major political, economic and diplomatic developments in the Soviet Union, stressing Leninism, Stalinism, and Khrushchevism.

HI9 - 530 The Mind of Modern Russia

An analysis of the central attitudes and ideas that have shaped the Russian mind from the Muscovite era to the present.

HI9 - 700 China in the Twentieth Century

A consideration of the major political, diplomatic, and intellectual developments in China since 1949.

HI9 - 920 Seminar on American Constitutional History

Varied topics to meet the student's needs; e.g., the Marshall Court, Taney Court, Warren-Burger Courts, etc.

Human Service Management

GRADUATE COURSES

HM9 - 300 Communications for Effective Management

Effective utilization of media, memoranda, digests, letters, formal reports, and large-scale meetings and conferences in managing human service organizations.

HM9 - 320 Practices in Community Organization

Studies the principles and methods of effective community organization, as a process of helping people and communities to help themselves. Range of theoretical and pragmatic approaches considered.

HM9 - 400 Leadership Skills and Social Group Work

Explores values, objectives and principles of effective group leadership. Analysis of group formation, inter-group relations, developmental group stages, and termination.

HM9 - 420 Organizational Theory and Effective Intervention

Organizational theory and development strategies considered. Formal and informal aspects of organizations, authority structures, specialization and integration of functions, and the role of professional managers.

HM9 - 440 Politics, Public Policy and the Human Services

An explication of the nature of political power and the influence of power upon the delivery of various types of social services.

HM9 - 450 Financial Management for Non-Profit Organizations

Theoretical and practical approaches to the allocation and control of financial resources in non-profit settings. Conventional and non-conventional budgeting techniques, cost/benefit analysis, and preparation of financial statements.

HM9 - 460 Seminar in Program Analysis and Evaluation

Explores philosophical issues, politics, and specific evaluation instruments involved in effective program analysis upon utilization of computer systems.

HM9 - 480 Advanced Supervision Skills

Examines supervision, staff development, and training in human services organizations. Case studies and supervision simulations utilized.

HM9 - 490 Stategic Decision Making and Computer Systems

The design, use, and organizational impact of the computer on managerial processes. Topics include systems design, modeling, inquiry systems, management information systems, and simulation.

HM9 - 910 Unions and the Public Sector

An intensive examination of key collective bargaining topics. Topics include grievance-arbitrations processes, productivity bargaining, and impasse resolutions on the public sector.

HM9 - 930 Marketing in Non-Profit Organizations

Examination of the role of marketing concepts and tools in non-profit organizations. Marketing research, product development, pricing, advertising, publicity, and market control studied in the non-profit sphere.

HM9 - 940 Assigned Readings in Human Service Management

Prerequisite: HM 9 - 400.
Independent study under faculty supervision. Student will define area of advanced study in human service management.

HM9 - 950 Accounting and Budgeting for Public Management

Introduction to accounting and budgeting concepts as applied to the management of federal, state, aontrol limit theorem, confidence intervals, probability values, analysis of variance, simple and multiple regressions, and partial and multiple correlations.

HM9 - 971 Personnel Management and Non-Profit Organizations

Introduction to personnel management, manpower planning, employee selection, recruitment strategies, personnel practices, employee evaluation, and labor relations. Special focus upon human service applications.

HM9 - 972 Public Law

Legal framework and constraints within which human service administrators operate. Discussion of rights and responsibilities, and discretionary limits of managerial decision-making.

HM9 - 980 Research in Human Service Management

Prerequisite: HM9 - 400.
Supervised research in human service management. Students will learn a variety of research tools specifically relevant to research in human service organizations.

Mathematics

UNDERGRADUATE COURSES

MA 100 Basic Mathematics

Provides the student who has little or no background in mathematics with the necessary arithmetic and algebra for the understanding of today's mathematics.
Category 1.

MA 110 College Algebra

Properties of the real number system based upon set-theoretical foundations; linear, quadratic, and simultaneous equations, inequalities, absolute value, complex numbers, determinants, induction.
Category 1.

MA 115 College Algebra and Trigonometry

The background in algebra and trigonometry needed for calculus. Open to business administration majors only.
Category 1.

MA 120 College Trigonometry

Plane trigonometry required for the study of calculus; trigonometry of the general angle, the use of logarithms, solution of right triangles, radian measure, identities and other topics.
Category 1.

MA 130 Modern Mathematics for Elementary Majors

Mathematical concepts needed to teach the new approaches found in modern arithmetic textbooks; prepares prospective teachers of mathematics. Non-credit for math majors.
Category 1.

MA 131 Modern Geometry for Elementary Majors

Geometric concepts from an intuitive point of view; measurement of length and angles, closed curves, circles, mathematical constructions, congruent sets of points, area of plane regions, and graphs; non-credit for math majors.
Category 1.

MA 140 Problem Solving

Develops skill in translating word problems into mathematical language; types of problems and basic relationships are discussed.
Category 1. 1 credit.

MA 160 Survey of Mathematics I

Topics to convey an appreciation of mathematics such as logic, set theory, probability, statistics, etc.
Category 1.

MA 161 Survey of Mathematics II

Topics to convey an appreciation of mathematics such as algebra, geometry, number theory, and others.
Category 1.

MA 170 Analytical Geometry

Essential classical topics of analytical geometry; graphs and their uses, and applications to empirical curve fitting.
Category 1.

MA 220 Discrete Mathematics I

Focuses on the mathematics of computer science. Topics to be covered are mathematical logic, including switching circuits, set theory and mathematical induction.
Category 1.

MA 225 Business Math I

Topics include checking accounts, payroll, simple interest, notes, discount, consumer interest, financial statements, retailing and investments.
Category 3.

MA 250 Introduction to Statistics I

Probability and basic statistical techniques and decision making as they are applied to data.
Category 1.

MA 251 Introduction to Statistics II

Prerequisite: MA 250 or equivalent or consent of instructor.
Continuation of MA 250; including regression, correlation, Chi-square and contingency tables, analysis of variance and sampling techniques; computers will be employed.
Category 1.

MA 300 Calculus I

Prerequisite: Trigonometry or MA 120.
Rate of change of a function; limits, derivatives of algebraic functions and applications of the derivative; integration of algebraic functions and trigonometric functions.
Category 1.

MA 301 Calculus II

Prerequisite: MA 300.
Continuation of MA 300; integration, applications of the definite integral, transcendental functions and methods of integration.
Category 1. 4 credits.

MA 302 Calculus I for Management

Prerequisite: MA 115.
Rate of change of a function, limits, derivatives of algebraic functions, applications of the derivative with emphasis on business applications.
Category 1. 4 credits.

MA 303 Calculus II for Management

Prerequisite: MA 302.
Continuation of MA 302; integration, applications of the integral with emphasis on business applications.
Category 1. 4 credits.

MA 305 Abstract Algebra

Prerequisite: MA 220.
Fundamental concepts of sets, mathematical systems, groups, rings, and fields.
Category 3.

MA 310 Calculus II

Prerequisite: MA 301.
Continuation of MA 301; indeterminate forms, infinite series, vectors, partial differentiation, multiple integration and line integrals.
Category 1.

MA 320 Ordinary Differential Equations

Prerequisite: MA 310 (may be taken concurrently).
Theory and application of ordinary differential equations of the first and second orders, with linear constant-coefficient type; partial differential equations.
Category 2.

MA 321 Discrete Mathematics II

Prerequisite: MA 220.
Continuation of MA 220. Topics include partially ordered sets, lattices and Boolean algebra.
Category 1.

MA 325 Introduction to Quantitative Methods

Prerequisite: MA 220.
Basic probability and statistics, mathematics of finance, linear programming, simplex method, replacement problems, queuing theory, elementary game theory, inventory control models.
Category 1.

MA 330 Linear Algebra

Prerequisite: MA 301.
Solutions of simultaneous equations by means of matrices and determinants; properties of vector spaces, linear transformations, characteristic values, bilinear and quadratic forms.
Category 3.

MA 334 Statics

Prerequisites: PY 121 and MA 310.
Emphasis upon mathematical and physical formulation of principles underlying the solution of engineering problems; vector algebra; equilibrium; centroids and moments of inertia.
Category 3.

MA 336 Dynamics

Prerequisite: MA 334.
Rectilinear and curvilinear motion of a particle, relative motion, harmonic motion, variable velocities and accelerations, the work-energy principle, impulse and momentum.
Category 3.

MA 338 Surveying

Prerequisite: MA 120 or equivalent.
Use, care and adjustment of surveying instruments, boundary surveys, horizontal and vertical curves, earthwork and topography, field and laboratory work along with lectures.
Category 3.

MA 340 Modern Geometry I

Prerequisite: Completion of freshman year.
Axiomatic geometry with emphasis on Euclidean geometry; non-Euclidean geometrics; principle of duality; Desargues', Pascal's and Brianchon's theorems; harmonic sets and divisions; cross ratio and others.
Category 2.

MA 341 Modern Geometry II

Prerequisite: MA 340.
Continuation of Modern Geometry I; with topics from projective geometry.
Category 3.

MA 350 History of Mathematics

Prerequisite: Completion of freshman year.
Surveys the developments of algebra, arithmetic, plane geometry and trigonometry by tracing certain fundamental concepts in mathematics; starts with Euclid and ends with the twentieth century.
Category 3.

MA 360 Number Theory

Prerequisite: MA 220 or MA 130.
Theory of numbers; divisibility properties of integers, prime numbers, the Euclidean algorithm, the unique factorization theorem, congruences, Diophantine equations, quadratic reciprocity, number theoretic functions.
Category 3.

MA 370 Introduction to Actuarial Science

Prerequisite: MA 301.
Mathematical theory of compound interest with applications to the solution of interest problems.
Category 3.

MA 375 Life Contingencies

Prerequisite: MA 370.
A survey of the fundamental principles of life contingencies with applications to American life insurance practice.
Category 3.

MA 376 Combinatorial Mathematics

Prerequisite: MA 220.
Topics include general counting methods, recurrence relations, elements of graph theory, trees and search.
Category 3.

MA 380 Probability

Prerequisite: MA 310.
Methods for interpreting results of experiments; distributions, probability, random variables, binomial probability, normal probability.
Category 3.

MA 381 Mathematical Statistics

Prerequisite: MA 380.
Sequel to MA 380; sampling distribution, point and interval estimation, tests of hypotheses, regression and correlation, analysis of variance, decision theory.
Category 3.

MA 401 Ring Theory

Prerequisite: MA 305.
Isomorphism theorems; integral domains and fields; maximal, prime and primary ideals; divisibility theory; polynomial rings; radicals; direct sums.
Category 3.

MA 410 Advanced Calculus I

Prerequisite: MA 310.
Elementary topology; definition and properties of functions; rigorous treatment of integration; Taylor's theorem; infinite series and power series.
Category 2.

MA 411 Advanced Calculus II

Prerequisite: MA 410.
Continuation of MA 410; functions of several variables; introduction to different geometry, differential forms, theorems of Gauss, Green and Stokes; Lebesque integration may be included.
Category 2.

MA 425 Introduction to Partial Differential Equations

Prerequisite: MA 320 or equivalent.
Solutions and techniques regarding partial differential equations for math and science students.
Category 3.

MA 430 Topology

Prerequisites: MA 310, MA 220.
Algebra of sets; cardinal and ordinal numbers; topological spaces; connectedness, compactness, and continuity; separation and countability; axioms, metric spaces; complete metric spaces; product spaces; function and quotient spaces.
Category 3.

MA 440 Introduction to Numerical Analysis

Prerequisite: MA 310 or consent of instructor.
Methods for solutions of equations, for physics and mathematics majors or minors and computer science students; a laboratory session in conjunction with the lectures wiht some computing devices and techniques.
Category 1.

MA 441 Numerical Methods

Prerequisite: MA 440.
Numerical methods for solving differential equations in electrical, mechanical, chemical, biological, and other physical problems; a laboratory session in conjunction with the lectures with some computing devices and techniques.
Category 3.

MA 450 Complex Variables

Prerequisite: MA 310.
Theory of functions of complex variables; complex numbers, functions, limits and continuity, differentiation, Cauchy-Riemann Equations, Cauchy's Theorem, Taylor and Laurent series, residues and poles.
Category 3.

MA 460 Operations Research

Prerequisite: MA 311.
Topics include formulation of linear optimization model, algebraic and geometric representation, simplex method, dynamic optimization models, probabilistic dynamic programming.
Category 3.

MA 498 Internship

Prerequisite: Consent of instructor.
Working in and for an organization where one's skills can be tested in real situations. The purposes: opportunity to gain experience; to increase one's knowledge in various functional areas; and to establish important contacts with an organization.
Category 1.

MA 499 Independent Study

Prerequisite: Consent of instructor.
Offers advanced students an opportunity to examine topics not normally taught in other math or computer courses. Geared to the interests of both the student and the instructor.
Category 1.

GRADUATE COURSES

MA8 - 200 Topics in Geometry

Prerequisite: MA 220 or equivalent.
Alternate approaches to Euclidean geometry, including analytic methods, vector methods, isometrics, and homthetics.

MA8 - 210 Euclidean and Non-Euclidean Geometry

Axiomatic geometry with emphasis on Euclidean geometry; non-Euclidean geometrics, principle of duality; Desargues', Pascal's, and Briachon's theorems; harmonic sets and division, cross ratio and others.

MA8 - 230 Modern Mathematics for Secondary School Teachers

Prerequisites: MA 300, MA 301.
Mathematical concepts from the current point of view; trigonometric, logarithmic, exponential, inverse trigonometric, and hyperbolic functions, limits, continuity, etc.

MA8 - 250 Numbers Systems

Development of the systems of integers, rational numbers, real numbers and complex numbers, beginning with Peano's axioms for the system of natural numbers.

MA8 - 380 Probability

Prerequisite: MA 310 or equivalent.
Probability, combinatorial methods, random variables, probability functions, moments, moment generating functions, central limit theorem, sampling.

MA8 - 390 Statistics

Prerequisite: MA8 - 380 or equivalent.
Decision theory, estimation, hypothesis testing, regression and correlation, analysis of variance.

MA8 - 400 Number Theory

Prerequisite: MA 220 or equivalent.
Includes divisibility, primes, congruence, primitive roots, and quadratic residues.

MA8 - 500 Statistical Techniques for Business, Liberal Arts, Nursing, and the Sciences

Statistical methods and decision methods as they are applied to data. Testing of hypotheses, sampling, nonparametric methods, regression, correlations, analysis of variance, time series, etc. Computer programming may be used.

MA8 - 568 Special Problems in Mathematics

Prerequisite: Consent of instructor.
Topics in mathematics not usually covered in formal course work.

MA8 - 600 Ordinary Differential Equations

Prerequisite: MA 310.
Techniques, numerical procedures, existence, uniqueness and properties of solutions of ordinary differential equations.

MA8 - 700 History of Mathematics

The evolution of fundamental mathematical concepts starting ca. 2000 B.C.; the creators of mathematics; a partial list of problems which motivated new discoveries and relationships with other sciences and humanities.

MA9 - 100 Analysis I

Prerequisite: MA 310.
Topics include elementary topology, continuity, differentiation, integration, infinite series, as well as other topics as time permits.

MA9 - 101 Analysis II

Prerequisite: MA9 - 100.
A continuation of Analysis I. Topics will include: theorems of Green, Stokes, and Gauss, infinite series, Lebesque integration, and other topics as time allows.

MA9 - 200 Vector and Tensor Analysis

Prerequisite: MA 310.
Vector algebra, differential and integral calculus of vectors with applications; curvilinear coordinates, reciprocal sets of vectors, contravariant and covariant vectors.

MA9 - 300 Integral Equations

Prerequisite: MA 310.
Linear integral equations of the first and second kind are studied along with some existence theorems, approximate solutions and applications.

MA9 - 301 Linear Algebra

Prerequisite: MA 220 or equivalent.
Fundamental concepts of systems of linear equations, matrices, vector spaces, linear transformations, determinants, inner products, eigenvalues, and eigenvectors.

MA9 - 310 Partial Differential Equations.

Prerequisite: MA 320.
Classification of partial differential equations: the theory of first-order linear partial differential equations with constant coefficients; existence and uniqueness theorems with mixed boundary value problems.

MA9 - 320 Numerical Analysis of Differential Equations

Prerequisite: MA 320.
Finite difference approximations applied to differential equations including the study of stability and convergence. Relaxation, gradient, and characteristics methods will also be studied.

MA9 - 370 Theory of Interest

Prerequisite: MA 310.
Mathematical theory and applications of compound interest: interest discount, present value, force of interest, annuities, amortization schedules, sinking funds, bonds, miscellaneous topics.

MA9 - 375 Life Contingencies

Prerequisites: MA8 - 380, MA8 - 390, MA9 - 370.
Applications of probability and the theory of compound interest in the mathematics of life insurance: mortality, premiums, reserves, benefits.

MA9 - 395 Multiple Regression

Prerequisites: MA8 - 500, CS8 - 300.
Applications of techniques of multiple regression to the statistical analysis of problems. Relations, correlations, simple linear regression, multiple regression with two independent variables, general multiple regression.

MA9 - 400 Abstract Algebra

Prerequisite: MA9 - 301.
Elementary properties of groups, rings, integral domains and fields. Groups through Sylow theory and (1) field theory through Galois theory (2) ring theory through primary decomposition or (3) linear algebra through Jordan canonical forms.

MA9 - 500 Complex Variables

Prerequisite: MA 310 or equivalent.
Function theory through differentiation, integration, Taylor and Laurent series and conformal mapping.

MA9 - 600 Topology

Prerequisite: MA9 - 100.
Basic topological concepts motivated by metric spaces are considered. The related properties of the separation axioms and compactness are investigated through the use of filters. If time permits, connectedness will be discussed.

MA9 - 700 Basic Category Theory

Prerequisite: MA9 - 400.
An introduction to the standard concepts of category theory-functors, natural transformations, universality, limits, co-limits, adjoints and triples.

MA9 - 710 Ring Theory

Prerequisite: MA9 - 400.
Basic results in Noetherian Rings and Dedekind Domains.

MA9 - 720 Field Theory

Prerequisite: MA9 - 400.
Basic concepts through Galois theory including algebraic and transcendental extensions and separability.

MA9 - 730 Fourier Analysis

Prerequisite: MA 310.
Fourier Series, integrals, and transforms with applications.

Media

UNDERGRADUATE COURSES

ME 100 Introduction to Media

A team-taught survey of the fundamental areas of communications media-information, technology, and performance.
Category 1.

ME 103 Radio and Television in the Modern World

Covers such critical issues as sex, violence, stereotyping in programming and the potential impact of new delivery systems on traditional broadcasting.
Category 1.

ME 106 Library Research

Develops skills in finding information by using search strategies, identifying information sources, and applying them to fulfill information needs.
Category 3.

ME 110 Speech

Essentials of speech production and speech writing for large and small groups. Classroom practice in delivering various types of speeches.
Category 1.

ME 125 History of Communication Technology

Traces history of communications media from pictographic writing through the development of mass media and the latest media delivery systems.
Category 1.

ME 135 Oral Interpretation of Literature

Techniques of reading aloud and staging non-dramatic literature — e.g., short stories, poetry, etc. The student analyzes selections and then performs them in class.
Category 1.

ME 137 History of the Theatre

The history and interrelated development of film, television, theatre and radio from their beginnings to the present.
Category 2.

ME 140 Utilization of Instructional Materials

Selection and use of major types of audiovisual equipment and materials; use of projection and audio equipment.
Category 1.

ME 145 Media Graphics

Creating visual instructional media applying lettering, graphics and display techniques; end products include visuals for projected and non-projected use.
Category 1.

ME 150 Introduction to Photography

Covers the basic theory and practice of 35mm B/W photography, including camera handling, film processing, light meters, printing and picture content.
Category 1.

ME 190 American Entertainment

The history and nature of live and electronic performances from the Colonial period through the present. Television, film, theatre and radio are covered.
Category 1.

ME 191 Introduction to the Theatre

An overview of live performance, with the emphasis on audience appreciation. Performance arts and crafts are examined.
Category 1.

ME 192 Creative Dramatics

Principles and techniques of leading improvised dramatic activity, particularly with children. Involves sensory awareness, imagination, movement, and story dramatizations.
Category 3.

ME 193 Storytelling

Presenting poetry and prose orally to children. Introductory and follow-up techniques. In-class and field practice.
Category 3.

ME 201 Sources of Media Information

Prerequisite: ME 100.
Study of the most important sources of information in media; students will use the Learning Resources Center for solving problems.
Category 1.

ME 205 Telecommunications: An Introduction

The state of the art in communication media. Studies effect of satellites, cable, interactive television, and the computer on information flow.
Category 2.

ME 210 Introduction to Reference Sources

Prerequisite: ME 100.
Techniques of reference service tools in the school library.
Category 3.

ME 215 Speech for the Professional

Prerequisite: ME 110 or permission of instructor.
Stresses creative and flexible use of voice for the media professional. Practice in vocal quality, articulation, interpretation, accents and dialects.
Category 2.

ME 216 Cataloging and Organizing Material.

Prerequisite: ME - 100.
Principles and procedures involved in the acquisition, cataloging, and processing of book and non-book materials.
Category 3.

ME 220 Principles of Graphic Communication

Language and design of graphic communication; psychological principles of visual arts; interpretation of graphics in advertising, training, and information dissemination.
Category 2.

ME 225 The Musical Theatre

The history and nature of popular musical theatre. The uniqueness of musical theatre as an art form is emphasized.
Category 2.

ME 230 Learning Resources for Children

Building materials collections in the library media center to fill the needs of elementary school educational programs.
Category 3.

ME 231 Photographic Design and Visual Perception

Prerequisite: ME 150 or consent of instructor.
Expands basic skills in camera craft, film and print processing and presentation. Students will receive instruction and practice in the Zone System, a theory and practice of advanced exposure and film development control. There will be major emphasis on developed skills and vision in photographic composition and learning efficiency in designing purposeful photographic statements.
Category 1.

ME 235 Learning Resources for Young Adults

Relates the acquisition of a collection of print and non-print materials to the education program of a modern secondary school.
Category 3.

ME 236 Lighting for Media

Prerequisite: ME 100 or consent of instructor.
A study of how light is applied and controlled in performances, video and film production, and photography. Offered in a lecture and demonstration format, the course surveys the basic concerns of light and lighting.
Category 2.

ME 240 Elements of Screen Language

The grammar of screen images in film and television; use of frame, point-of-view, light, shadow, juxtaposition, color, and transition devices.
Category 3.

ME 241 The Art of the Motion Picture

Aesthetic and theoretical dimensions of the motion picture from *Citizen Kane* and neorealism (1941) to the present.
Category 3.

ME 242 Basic 8 MM Film Production

Experience in making motion pictures of rudimentary level with or without sound tape accompaniment; critiques of student work.
Category 2.

ME 243 Introduction to Film Animation

Using Super 8mm motion picture format, students will plan and produce an animated film employing basic art techniques and graphics.
Category 2.

ME 245 Basic Acting for Stage and Screen

Prerequisite: ME 135 or consent of instructor.
Basic acting theory and practice. Students present brief monologues and scenes both on stage and before the camera.
Category 2.

ME 246 Acting II

Prerequisite: ME 135, ME 245 or consent of instructor.
Further development of basic acting skills for stage and screen through scene study. Some work may be done in co-operation with directing students.
Category 3.

ME 247 Producing Slide and Sound Programs

Prerequisite: ME 150 or consent of instructor.
Planning and producing slide programs with music and narration; techniques of storyboarding; copying and synchronizing audio with visual materials.
Category 2.

ME 248 Producing and Directing Audio Programs

Writing, selecting and recording sound, and assembling audio programs; radio production; use of portable and studio equipment; critiques of student programs.
Category 2.

ME 249 History of the Motion Picture

The history and development of the motion picture from Edison and Lumiere (1895) to Welles (1941).
Category 3.

ME 250 Classroom Use of Radio and Television

Study of the use of radio and television as instructional media; exploring the adaption of these media to instructional situations.
Category 3.

ME 255 Designing Instructional Media Modules

Prerequisite: ME 100
A systems approach to the design of instructional media with an emphasis on the development of computer-managed interactive video.
Category 2.

ME 260 Videotape Recording

Prerequisite: ME 100 or consent of instructor.
A beginning course in video program production, using lightweight and portable equipment.
Category 1.

ME 261 Elements of Closed Circuit Television

Theory and practice in use of closed circuit telvision; includes teleconferencing, surveillance, cable TV, self-instructional use. Field trips.
Category 1.

ME 270 Communication Theory

Theories of interpersonal communication: identification and discussion of modes, channels, and techniques; interpretation of visual and verbal messages.
Category 1.

ME 275 Scenecraft for Stage and Screen

Prerequisite: ME 100 or consent of instructor.
The design and construction of sets and scenery, the basics of special effects, stage and studio facilities, and facility organization and use. The roles and responsibilities of behind-the-scene personnel. Applications for film, theatre, and television.
Category 3.

ME 276 Costume and Makeup for Performance

Basics of historical research and design, applicable to both stage and screen work. Practicum in constructing costumes and applying makeup.
Category 3.

ME 280 Staging Media Performances I

Prerequisite: ME 191, ME 245, or consent of instructor.
Script selection, casting, scene analysis and other directorial concerns. Application to film, theatre, and television.
Category 3.

ME 281 Staging Media Performances II

Prerequisite: ME 280.
A continuation of ME 280. Advanced theoretical and practical problems facing the director. Applications for all media.
Category 3.

ME 290 Theatre for Children

Organization of a children's theatre, script selection, and visual design. Alternate performance spaces, such as classrooms and parks, emphasized.
Category 3.

ME 320 The Library Media Specialist in the Learning Process

Prerequisite: Only for senior Education Media majors.
Examines the ways the library media specialist participates in instructional programs as teacher and as consultant in and provider of media resources.
Category 3.

ME 321 Rehearsal and Performance

Prerequisite: ME 100.
Public performance of full-length stage productions under faculty direction. Students assume performance and/or production "roles" as described in departmental manual.
Category 1.

ME 324 Theatre in the Classroom

Prerequisite: Admission by interview and/or audition.
Touring plays to elementary and secondary classrooms. Acting, directing, designing and managerial responsibilities according to students' demonstrated abilities.
Category 3.

ME 365 Advanced Photography

Prerequisite: ME - 150, ME - 231 or consent of instructor.
Techniques used in expressive and applied photography including the study and control of density formation, lighting, and visual problem solving.
Category 2.

ME 367 Photo-Journalism

Prerequisite: ME 150, ME 231 or consent of instructor.
The theory and practice of narrative photography applicable to daily news, feature story, and commercial journalism.
Category 2.

ME 370 Media Advertising and Publicity

Prerequisite: ME 100.
The basics of creating, preparing and disseminating advertising and publicity materials through the media. Print and non-print channels are covered.
Category 2.

ME 375 Producing of Media Performances

Prerequisite: ME 100 or consent of instructor.
Organization and administration of performance production companies and events; applications for television, film, theatre, and radio.
Category 3.

ME 384 Reviewing of Media Performances

Prerequisite: ME 100 or consent of instructor.
Evaluation and analysis of film, television, theatre, and radio performances, development of intelligent, ethical standards of judgment.
Category 3.

ME 385 Writing for Television and Radio

Prerequisite: ME 100 or consent of instructor.
Creating scripted material for the electronic media. All types, styles, and formats will be covered.
Category 3.

ME 386 Playwriting for Stage and Screen

Prerequisite: ME 100 or consent of instructor.
Creating fictional dramatic material for television, film, and radio, Completion of a short script is required.
Category 3.

ME 394 Producing and Directing the Television Program I

Prerequisite: ME 100, ME 260, or consent of instructor.
Basics of studio production including visualization and sequencing of short scripts. Covers sound, graphics, lighting, and technical direction.
Category 1.

ME 395 Producing and Directing the Television Program II

Prerequisite: ME 394 or consent of instructor.
Focuses on production of student-oriented scripts; includes field production and post-production dubbing and editing of sound and images.
Category 2.

ME 396 Videotape Editing

Prerequisite: ME 260 or ME 394.
Principles and procedures of editing half-inch and three-quarter-inch videotape. Students will produce short programs.
Category 1.

ME 404 Independent Study in Media

Prerequisite: ME 100 or consent of instructor.
Permits advanced students to investigate topic of special interest through research or production of a project. Periodic consultations with advisor.
Category 1.

ME 410 Special Topics in Performance

Prerequisite: Completion of sophomore year.
The in-depth examination of an area of interest in film, television, theatre, or radio. One-time-only subjects, not covered in other departmental offerings.
Category 3.

ME 435 Cooperative Experience in Media

Prerequisite: Two relevant media courses and consent of department.
Provides opportunity to advanced students to increase experience through internship with sponsoring community organization, institution, or business under appropriate supervision.
Category 1.

GRADUATE COURSES

ME8 - 102 Techniques of Media Advertising

Using the media to reach potential users of goods and services. All the media are covered.

ME8 - 110 Theatre: Yesterday, Today, and Tomorrow

Traces the evolution of theatre as an institution, as a medium for artistic expression, and as a forum during significant periods of history; and presents a prognosis for its future in a technological age.

ME8 - 115 American Entertainment through the Ages

An examination of the performers and performances seen and heard by the American population from the colonial period through the present. Although the emphais will be on live events, the contributions of motion pictures and television will be included.

ME8 - 118 Effective Public Speaking

A course which offers practical instruction in speech for everyday and special situations. Among the topics emphasized are preparation and delivery, influencing audiences and improving one's speaking image.

ME8 - 120 Oral Interpretation and Reader's Theatre

The principles and techniques of presenting dramatic and non-dramatic literature to audiences without scenery, costumes, make-up, or properties. The emphasis is on the application of vocal expressiveness to the material after appropriate analysis. In-class presentations.

ME8 - 150 Scriptwriting

Techniques of writing material for the major media: film, radio, television, and the stage. Students will be instructed in the ways by which structure, context, and aesthetics are combined to create the finished product.

ME8 - 160 Producing Theatre for Children

For the teacher or youth group leader with little or no background in practical theatre or the theatre practitioner unfamiliar with the genre of children's theatre; covers both artistic and practical concerns.

ME8 - 163 Puppetry

Combination lecture and workshop covering the actual design and construction of a variety of styles of puppets; facets of performance with puppets: characterization, plot, script adaptation, etc.

ME8 - 165 Children and the Performance Media

An examination of the relationships between young people and various forms of mass entertainment. Major consideration will be given to explorations of assets, liabilities, impacts, and responsibilities of each.

ME8 - 170 The Theatrical Experience

An examination of the world of live performance in a technological age. Theatrical arts and crafts; relationships among stage, motion pictures, and television.

ME8 - 180 Improvisational Acting

A workshop for actors of any level of experience and development, and for teachers and recreation leaders for all age groups. Creative movement, ensemble performance, mimed and spoken scenes, improvisation.

ME8 - 245 Design and Preparation of Media Grahpics I

Designed to teach basic skills in graphic presentations. Instruction includes design and lettering techniques, composition, and layout of visuals.

ME8 - 246 Design and Preparation of Media Graphics II

Prerequisite: ME8 - 245 or consent of instructor.
An advanced course in design and presentation of graphic materials utilizing visual design, air brush, transparency, and high contrast photography.

ME8 - 252 Photojournalism

Prerequisites: ME 150 or ME8 - 250, ME 365 or ME8 - 253, adjustable camera.
A study of the photographic essay as a form of visual communication. Includes the history of the photographic essay, methods of production, categories of essays, and image-word relationship and editing.

ME8 - 254 Basic Videotaping

Emphasis on the use of portable equipment; all aspects of basic video and audio recording, editing, and dubbing.

ME8 - 256 Color Photography I

Prerequisites: 6 credits in photographic education or advanced photographic standing, consent of instructor.
An introduction to color photography using transparency films.

ME8 - 257 Super 8 Film Production

Theory and techniques of visualization required in the production of super 8 mm. motion pictures. Emphasis will be placed on laboratory work in order to develop familiarity with pictorial organization and equipment use.

ME8 - 258 Applied Photographic Methods in Graphic Communication

Combined use of photography and graphics to produce promotional and educational projects. Emphasis on creative problem-solving through layout and design techniques.

ME8 - 260 Slide/Sound Production

Planning, preparing, and producing photographic presentations synchronized with appropriate narration and music; techniques of storyboarding, copying, and producing slides and audiotapes.

ME8 - 265 Audio Program Production

Principles and techniques of producing sound programs. Laboratory experience in production.

ME8 - 270 Systems Analysis in Library Administration

A course designed to teach library science students and practicing librarians the technique of evaluating the efficiency of an existing library system and selecting a new system through qualitative and quantitative measurement methods.

ME8 - 360 Television Production I

Provides the student with background and practice in the techniques of producing color television under studio conditions.

ME8 - 365 Television Production II

Prerequisite: ME8 - 360 or consent of instructor.
The student will gain experience in the areas of electronic videotape editing, technology of television engineering, creative video, remote production, and other advanced techniques. Primary emphasis is on the production of lengthy programs utilizing the advanced techniques.

ME8 - 367 Cable, Pay, and Satellite Television Systems

Designed to give students an understanding of the fastest-growing areas of the communications industry; history of the new technologies and their present and potential impact on the broadcast industry.

ME8 - 368 Closed Circuit Television

Prerequisite: ME8 - 360 or ME8 - 254.
The elements of CCTV including technical aspects and a survey of applications. Covers CATV, surveillance, and teleconferencing.

ME8 - 369 Instructional Television: Design and Production

Prerequisite: ME8 - 360
Planning, preparing, producing, and evaluating ITV programs for commercial organizations and for schools. Students will use studio facilities to produce modules.

ME8 - 396 Videotape Editing

The principles and procedures of editing one-half-inch and three-quarter-inch videotape using manual and electronic techniques and equipment. Students will produce short, edited programs.

ME8 - 400 Instructional Technology: Nature and Use

Provides situation for studying, evaluating, and designing techniques for the use of instructional media. Opportunities for developing skills in the operation of equipment and systems which facilitate communication in both formal and informal learning.

ME8 - 420 Instructional Systems Design

Intended to assist training and instructional personnel in the application of instructional technology to the solution of learning problems through systems analysis techniques.

ME8 - 435 Administration of Audiovisual Services

The principles and practices required to organize and administer production, use, and distribution services of non-print media in a unified media program at both the building and district level.

ME9 - 100 Communication Media

Intended to provide an integrating framework to assist the student's understanding of the relationships among the various concepts in the field. Includes reading and summarizing reports from the research literature.

ME9 - 300 Theories of Communication

Prerequisite: ME9 - 100.
A survey of research on theory of the processes of personal and group communication.

ME9 - 700 Computer-Assisted Library Service

Provides the background needed by the modern librarian who must plan and implement automated library systems.

ME9 - 710 Library Networks and Teleprocessing

The role of the time-shared computer in furthering library networks and sub-networks; non-computer-related activities of networks.

ME9 - 910 Media Internsip

Prerequisites: Advanced standing in the concentration and demonstrated competence in the appropriate area.
Provides opportunity to advanced students to increase experience through internship with sponsoring community organization, institution, or business under appropriate supervision.

ME9 - 920 Directed Studies in Media

Prerequisite: Consent of faculty advisor.
Permits advanced students to investigate topic of special interest through research or production of a project. Periodic consultations with advisor.
3-6 credits.

Music

MU 100 Music Fundamentals

Basic knowledge and theory of notation, major and minor scales, intervals, rhythms, and chords.
Category 2.

MU 115 Music Appreciation

A general survey of masterpieces of the major composers of various periods in the history of music.
Category 1.

MU 120 History and Literature of Music I

A survey of music history from the medieval to the classical period.
Category 3.

MU 125 History and Literature of Music II

A survey of music history from the classical period to the twentieth century.
Category 3.

MU 130 Music of the Baroque Period

The period 1600-1750 with emphasis on Bach and Handel.
Category 3.

MU 135 Music of the Classical Period

The period 1750-1827; Haydn, Mozart and Beethoven.
Category 3.

MU 140 Music of the Romantic Period

A survey of nineteenth-century music beginning with Beethoven.
Category 2.

MU 145 Twentieth-Century Music

A comprehensive study and general listener's approach to contemporary music beginning with impressionism.
Category 2.

MU 150 Opera

Analysis of the masterworks of the standard operatic repertoire.
Category 1.

MU 155 The Golden Era of Piano Music

A survey of piano music beginning with Beethoven and continuing through the Romantic tradition to the early twentieth century.
Category 2.

MU 160 Symphonic Music

A survey of symphonic music beginning with the classical period.
Category 2.

MU 165 The Concerto

The concerto from the eighteenth to the twentieth century with emphasis on the development of the piano concerto.
Category 2.

MU 170 Chamber Music

A survey of chamber music beginning with the classical period.
Category 3.

MU 175 Music in America

A survey of music history and literature in America including gospel spirtuals, jazz, popular and classical music.
Category 3.

MU 180 Form and Analysis

An introduction to and analysis of the formal structures of music.
Category 3.

MU 205 Harmony I

Prerequisite: MU 100 or consent of instructor.
Harmonization of melodies, basic chord structures, ear-training, harmonic analysis, inversions, non-harmonic tones, figured bass.
Category 3.

MU 210 Harmony II

Prerequisite: MU 205 or consent of instructor.
Harmonization of melodies using primary and secondary chords, harmonic analysis, ear-training, secondary dominants and modulation.
Category 3.

MU 237 Music in the Elementary School

Guiding growth in rhythmic, notational, and listening experiences. Survey of music books and materials.
Category 3.

MU 400 Independent Study in Music

Prerequisite: Consent of instructor.
An opportunity for further study in a special field of interest under faculty supervision.
Category 1.

GRADUATE COURSES

MU8 - 250 Music of the Romantic Period

A survey of nineteenth century music beginning with Beethoven. Emphasis on listening and stylistic aspects of major romantic composers.

MU8 - 275 Symphonic Music

The study of symphonic masterpieces from the eighteenth and nineteenth centuries. Emphasis will be given to major composers.

MU8 - 300 The Enjoyment of Opera

The beginnings of opera as a stage presentation up to and including opera series of the twentieth century; Italian, French, and German composers.

MU8 - 325 The Golden Era of Piano Music

The development of piano literature in the nineteenth and early twentieth centuries; emphasis on major composers of solo piano music including Beethoven, Schumann, Chopin and Liszt.

MU8 - 390 Survey of Music in America

Survey of music history and literature in America including gospel spirituals, jazz, popular and classical music.

Natural Sciences

UNDERGRADUATE COURSES

NS 101 Physical Science I

Survey of physics and chemistry; evolution of concepts and theories; measurement, gravitation, energy, conservation laws, kinetic molecular theory, and wave motion.
Category 1.

NS 102 Physical Science II

Prerequisite: NS 101 or consent of instructor.
Continuation of NS 101; light, electricity, magnetism, fundamentals of chemistry, atoms and molecules, the structure of atoms, quantum theory, and relativity.
Category 1.

NS 103 Physical Science Laboratory I

Prerequisite: To be taken concurrently with NS 101 or after completing NS 101.
Laboratory methods and techniques associated with topics included in NS 101.
Category 1.

NS 104 Physical Science Laboratory II

Prerequisite: To be taken concurrently with NS 102 or after completing NS 102.
Laboratory methods and techniques associated with topics included in NS 102.
Category 1.

NS 105 Introduction to Astronomy

The tools of the astronomer, the nature of celestial space; star locations, motions, nature, and evolution; the universe; three lectures per week.
Category 1.

NS 108 Developments in Physical Science Since 1800

Chronological, non-mathematical development of contributions to science by Dalton, Faraday, Rutherford, the Curies, Einstein, and others.
Category 3.

NS 109 Fundamentals of Laboratory Technique

Familiarization with some of the simple equipment and operations employed in making measurements in the physical sciences.
Category 3.

NS 110 Energy in the Modern World

Interdisciplinary course examining the relation of energy and technology to living systems, community and urban life, and current social policy.
Category 1.

NS 201 Science and Society

Science examined in a historical and social context; the impact of science on man's interpretation of the natural world. For non-science majors.
Category 1.

NS 260 Energy Conservation and Management

Examination of methods to conserve and manage existing and alternate energy systems and preparation of energy management plans.
Category 2.

NS 261 Energy Applications and Techniques

Energy-measurement techniques are applied to components of energy conservation and solar conversion systems with student ingenuity encouraged.
Category 2.

NS 262 Fundamentals of Solar Energy

Analysis of the major concepts and systems for collection, storage, and distribution of solar energy via a problem-solving approach.
Category 2.

NS/BI 315 Neuroanatomy and Physiology

Prerequisites: BI 161, BI 162.
The structural and functional organization of the central and peripheral nervous system. Principles of normal and abnormal transmission, integration and storage of information in neuronal pathways.
Category 1. 4 credits.

NS 340 Energy Construction Methods and Techniques

Prerequisite: NS 260.
Drafting and model-making skills needed for site and building planning and construction detailing as related to energy systems.
Category 2.

NS 342 Shelter Design and Alternative Energy

Prerequisites: NS 260 and NS 340.
The process of design in planning shelter and alternative energy systems appropriate to the solution of student-selected design problems.
Category 3.

NS 346 Design and Operation of Solarspaces and Greenhouses

Prerequisites: NS 260 and NS 261.
Stress will be on passive solar design together with conditions for human comfort, plant growth, and impact on attached space.
Category 3.

NS 348 Computer and Calculator Application to Energy Studies

Prerequisites: CS 111 or equivalent and NS 260.
Application of computer programming to energy system design, engineering, and economics utilizing individual programs as well as available software.
Category 3.

NS 349 Energy Implications of Forestry and Land Management

Prerequisites: BI 151 and NS 260.
Principles and practices of forest silviculture and woodlot management with emphasis on energy forms. Students will develop own management plans.
Category 3.

NS 400 Natural Science Seminar

Prerequisite: Consent of department.

Contemporary developments in the natural sciences; technical literature, independent projects or studies, and the preparation and presentation of technical papers.
Category 1.

NS 410 Independent Studies in Natural Science

Prerequisites: 24 credits in science, 4 courses in one science, and consent of department.
Opportunity for advanced students to pursue a topic of special interest involving extensive reading, experimentation, and research.
Category 1.

GRADUATE COURSES

NS8 - 089 Education Aviation/Aerospace

Aircraft and space vehicles as learning experiences to teach traditional elementary school subjects. Participants will develop modules, units, and teaching aids.

NS8 - 110 Astronomy in the Space Age

Lectures, discussions, and laboratory; the galaxies, cosmogony, and space exploration; two lecture hors and one two-hour laboratory.

NS8 - 115 Elementary Space Science

The composition of the earth, the physical laws of space, rocket propulsion, space navigation, and human survival. For teachers.

NS8 - 120 Man's Environment: The World of Energy

Interdisciplinary approach to energy as it applies to man's survival. A comprehensive look at the nature of energy, including entropy, atomic energy, new and alternative sources of energy.

NS8 - 125 Man's Environment: The Oceans

Geography of the sea, physical and chemical properties, the ocean environment, the dynamic integration of land, sea, and air, and the contaminated ocean.

NS8 - 300 Computer Applications for Natural Science

Survey of useful computer problems including large data base management, simulation techniques and principles of modern operating systems as needed in the engineering and applied world.

NS8 - 400 Physical Science Methods and Techniques

Basic procedures and techniques associated with the teaching of science. Open to anyone desirous of obtaining a background in physical science.

NS8 - 404 Energy Applications and Techniques

Energy measurements and techniques for solar collectors. Altitude and azimuth of the sun, radiation characteristics, collector parameters, air and water collectors, and energy storage.

NS8 - 450 Electronic Measurements

A laboratory course in electrical and electronic measurements and instrumentation with theory of electron emission, electron tubes, and solid state devices as needed.

NS8 - 500 Workshop in Aviation/Aerospace Science

Direct application of physics, mathematics, earth science, biology, sociology, and other disciplines. Experts will lecture and will direct laboratory experiences.

NS8 - 503 Education in Flight

Aviation history, aspects of aerospace, human stresses, and an introduction to commercial aviation. The science of flight, aerodynamics, aircraft nomenclature. An orientation flight will be available.

NS8 - 504 Aerospace Education

Reviews the science of flight; instruction in airframes and engines, navigation and communications, meteorology, and rocketry. Field trips will include airports and aerospace facilities.

NS8 - 577 Case Studies in Environmental Science

Air and water pollution, radiation, thermal pollution, and the possible environmental impact of proposed scientific and technological undertakings.

NS8 - 679 Energy Auditing of Your Home or Business

The step-by-step process of how to conduct an energy audit and apply it to home or business.

NS8 - 852 Modern Topics in Environmental Science

The interdisciplinary nature of physical law as applied to the analysis of man's physical environment. Air and water pollution; weather modification; environmental management and protection; and environmental studies.

NS8 - 879 Process of Science Workshop

A laboratory approach to the study of physics, chemical and earth sciences for elementary school teachers.

NS9 - 150 Research in Aerospace Education

Prerequisite: NS8 - 503, NS8 - 504 or consent of instructor.
Research in curriculum development at any education level; production of educational aids and activities.
3-6 credits.

Nursing

UNDERGRADUATE COURSES

NU 100 Humanism in Health Care

Perception of health, enlarged from a clinical/illness to a holistic/wellness concept. Four models of health care are explored.
Category 3.

NU 200 Caring and Professionalism

Introduction to the concept of caring and its application to understanding of self and of others, particularly in relation to providing effective nursing services.
Category 3.

NU 210 Basic Electrocardiography

Electrocardiography: the normal heart and basic arhythmias originating in the atrium, atrioventricular junction, and ventricles.
Category 3.

NU 220 Current Concepts in Cancer Nursing

Nursing care and management of cancer: awareness, screening techniques, and early detection, modalities of treatment, quality of life, and rehabilitation.
Category 3.

NU 230 Family-Centered Nursing Practice

The impact on families as well as on individuals: environments, family factors which contribute to family disruption, nursing intervention to minimize disruption.
Category 3.

NU 240 Basic Coronary Care for Nurses

Cardiovascular nursing: alterations in physiology related to the cardiovascular system; communications with other health team members concerning the needs of the cardiac patient.
Category 3.

NU 300 Group Communication Seminar I

Prerequisite: Consent of department.
Group process through interaction with peers; group structure and function. Students will identify their personal and professional goals.
Category 1. 1 credit.

NU 310 Nursing Science I

Prerequisite: Consent of department.
The nursing process is operationalized in the care of client-families in community health settings. Five credits theory; three credits clinical.
Category 1. 8 credits.

NU 320 Nursing Theory

Prerequisite: Consent of department.
Making the transition from a technical to a professional practitioner; the role of science and theory building in relation to the developing science of nursing; theories of nursing.
Category 1.

NU 400 Group Communication Seminar II

Prerequisites: NU 300, NU 310, NU 320.
The independent and interdependent functions of various health care providers as they relate to nursing; discussion of personal and group experiences in nursing practice.
Category 1. 1 credit.

NU 410 Nursing Science II

Prerequisites: NU 300, NU 310, NU 320.
Provides an opportunity for students to explore and participate in the role of professional nursing in primary-care settings. Three credits theory; six credits clinical. Students must provide transportation.
Category 1. 9 credits.

NU 420 Research Seminar

Prerequisites: NU 300, NU 310, NU 320, NU 400.
Students work individually and in small groups investigating nursing practice problems related to the interaction between the nurse and the client. One hour lecture, two hours seminar, three hours directed study.
Category 1. 4 credits.

NU 430 Group Communication Seminar III

Prerequisites: NU 400, NU 410, NU 420.
The role of the professional nurse in decision-making relating to delivery of health care.
Category 1. 1 credit.

NU 440 Nursing Science III

Prerequisites: NU 400, NU 410, NU 420.
Provides an opportunity for students to demonstrate synthesis of previous learning while further expanding their roles in the health care delivery system. Five credits theory; three credits clinical. Students must provide transportation.
Category 1. 8 credits.

NU 450 Leadership in Nursing

Prerequisite: NU 400, NU 410, NU 420.
The leadership and management roles of various members of the health care team are explored.
Category 1.

NU 480 Independent Study

Prerequisite: Consent of department.
An opportunity for the student to engage in special study in nursing according to individual needs and interests and faculty availability.
Category 1. 1-4 credits.

GRADUATE COURSES

NU8 - 200 The Nurse and the Law

Legal problems: malpractice, abortions, and employee-employer relationships. How the nurse can handle such situations in order to care for the patient and also comply with the law.

NU8 - 230 Introduction to Health Assessment

Theoretical and practicum components: introduces health care data collection skills including history-taking and physical assessment; emphasizes problem-oriented record system.

Occupational Therapy

OT 100 Introduction to Occupational Therapy

An introductory survey of occupational therapy history, theory, literature, terminology, areas of practice, interdisciplinary relationships, current trends, and future directions.
Category 1.

OT 200 Occupational Therapy Intervention Techniques: Media I

Prerequisite: OT 100
An introduction to the use of activities as therapeutic media in occupational therapy. Activity procedures, equipment, supplies, teaching methods, activity adaptation, and application to clinical situations; leather and ceramics.
Category 1.

OT 201 Occupational Therapy Intervention Techniques: Media II

Prerequisite: OT 100
A continuation of the exploration of activities as therapeutic media. Procedures, equipment, supplies, teaching methods, activity adaptation and analysis, and adaptation to clinical situations; wood and fibers.
Category 1.

OT 303 Human Performance, Occupation, and the Activity Process

Prerequisite: OT 200, OT 201.
Investigation and application of theories basic to occupational therapy practice including those related to human performance, occupation, adaptation, and the therapeutic use of purposeful activity.
Category 1.

OT 305 Health and Illness: Physiological

Prerequisite: OT 100.
Concepts of health and illness; methods of physiological health promotion and protection; characteristics and psychosocial implications of physiological conditions encountered in occupational therapy practice.
Category 1.

OT 310 Occupational Therapy Methods with Developmental Problems I

Prerequisites: OT 200, OT 201; to be taken concurrently with OT 311.
Theories and techniques of assessment and intervention with problems of development affecting sensorimotor, cognitive, and psychosocial function in neonatal to adolescent populations.
Category 1.

OT 311 Practicum in Developmental Problems I

Prerequisites: OT 200, OT 201; to be taken concurrently with OT 310.
Supervised clinical observation and participation in assessment and intervention approaches to

developmental problems in the neonatal through adolescent age group.
Category 1. 1 credit.

OT 312 Occupational Therapy Methods with Developmental Problems I (Accelerated)

Prerequisite: Consent of instructor.
An accelerated course in occupational therapy approaches to developmental problems in neonatal to adolescent populations. Structured specifically for the student with an associate's degree in occupational therapy. Includes practicum.
Category 1. 2 credits.

OT 315 Health and Illness: Psychosocial

Prerequisite: OT 100.
Concepts of psychosocial health and illness; the role of occupational therapy in the promotion of psychosocial health; characteristics of psychosocial diagnoses commonly encountered in occupational therapy.
Category 1.

OT 320 Occupational Therapy Methods with Developmental Problems II

Prerequisites: OT 310, OT 311; to be taken concurrently with OT 321.
Theories and techniques of assessment and intervention with problems of development affecting sensorimotor, cognitive, and psychosocial function in young adult through elder populations.
Category 1.

OT 321 Practicum in Developmental Problems II

Prerequisites: OT 310, OT 311; to be taken concurrently with OT 320.
Supervised clinical observation and participation in evaluation and intervention approaches to adult developmental problems.
Category 1. 1 credit.

OT 325 Occupational Therapy Methods with Developmental Problems II (Accelerated)

Prerequisites: OT 312, consent of instructor.
An accelerated course in occupational therapy approaches to developmental problems in young adult through elder populations. Structured specifically for students with an associate's degree in occupational therapy. Includes practicum.
Category 1. 2 credits.

OT 330 Communication and Group Process in Occupational Therapy

Prerequisite: OT 303.
A survey of theories of communication and group process, and their application to occupational therapy. Therapeutic uses of the individual, dyads, and groups.
Category 1.

OT 405 Methods of Occupational Therapy Practice with Physiological Diagnoses

Prerequisites: OT 303, OT 305, OT 320, OT 321, BI/NS 315; to be taken concurrently with OT 406.
Techniques of therapeutic intervention, adaptation, health maintenance, and prevention of dysfunction applied to physiological diagnoses. Includes methods of assessment, treatment planning, implementation, and documentation.
Category 1.

OT 406 Practicum in Occupational Therapy with Physiological Diagnoses

Prerequisites: OT 303, OT 305, OT 320, OT 321, BI/NS 315; to be taken concurrently with OT 405.
Directed observation and participation in the clinical application of theories and methods of occupational therapy intervention with physiological diagnoses.
Category 1. 1 credit.

OT 407 Occupational Therapy Methods with Physiological Diagnoses (Accelerated)

Prerequisites: OT 312, OT 325, and consent of instructor.
An accelerated course in occupational therapy assessment and treatment approaches with physiological diagnoses. Structred specifically for the student with an associate's degree in occupational therapy. Includes practicum.
Category 1. 2 credits.

OT 410 Organization and Administration of Occupational Therapy Services

Prerequisite: OT 320, OT 321, or OT 325.
Introduction to principles of organization, administration, and management applied to the delivery of occupational therapy services; inter- and intradisciplinary relationships and patterns of organization of health delivery systems.
Category 1.

OT 412 Research Methods in Occupational Therapy

Prerequisites: MA 250, status of occupational therapy senior.
A review and analysis of historical and current research in occupational therapy and of methods of research appropriate to clinical situations.
Category 1.

OT 415 Methods of Occupational Therapy Practice with Psychosocial Diagnoses

Prerequisites: OT 315, OT 320, OT 321 or OT 325, OT 330; to be taken concurrently with OT 416.
Investigation of occupational therapy for a variety of psychosocial diagnostic categories. Methods of prevention, health maintenance, adaptation, and intervention including assessment, program planning, implementation, and documentation are explored.
Category 1.

OT 416 Practicum in Occupational Therapy Methods for Psychosocial Diagnoses

Prerequisites: OT 315, OT 320, OT 321 or OT 325; OT 330; to be taken concurrently with OT 415.
Directed observation and participation in the clinical application of theories and methods of occupational therapy intervention with psychosocial disorders.
Category 1. 1 credit.

OT 417 Occupational Therapy Methods with Psychosocial Diagnoses (Accelerated)

Prerequisites: OT 325, consent of instructor.
An accelerated course in occupational therapy assessment and treatment approaches with psychosocial diagnoses. Structured specifically for the student with an associate's degree in occupational therapy. Includes practicum.
Category 1. 2 credits.

OT 420 Methods of Facilitating Therapeutic Adaptation

Prerequisite: OT 405 and OT 406, or OT 407.
Introduction to the design, fabrication, and use of adapted clothing and equipment, assistive devices, orthotics, and prosthetics; principles of architectural and environmental adaptation.
Category 1.

OT 425 Seminar in Occupational Therapy

Prerequisites: Status of occupational therapy senior, consent of instructor.
An extensive investigation of occupational therapy as a discipline, its theoretical and philosophical bases, and the roles and responsibilities of student, entry level, and experienced therapists.
Category 1. 4 credits.

OT 450 Level II Fieldwork: First Placement

Prerequisite: Satisfactory completion of coursework required for graduation with a B.S. degree in occupational therapy.
Three months of full-time clinical occupational therapy experience in a setting treating primarily physiological problems. Supervised by experienced clinical occupational therapy faculty.
Category 1. 6 credits.

OT 451 Level II Fieldwork: Second Placement

Prerequisite: Satisfactory completion of coursework required for graduation with a B.S. degree in occupational therapy.
Three months of full-time clinical occupational therapy experience in a setting treating primarily psychosocial or developmental problems. Supervised by experienced clinical occupational therapy faculty.
Category 1. 6 credits.

Philosophy

UNDERGRADUATE COURSES

PH 100 Introduction to Philosophy

The fundamentals of philosophy: its vocabulary, problems, and methods.
Category 1.

PH 110 Introduction to Logic

The basic principles of rational argumentation and critical thinking.
Category 1.

PH 120 History of Western Philosophy

The development of philosophy in the Western world from the ancient Greeks to the twentieth century.
Category 1.

PH 130 Ethics: Human Conduct and Values

The nature of morality and value and their place in the world of human action.
Category 1.

PH 140 Philosophy of Science, Nature, and Man

A philosophical examination of the relation between man and the world as exemplified in science.
Category 1.

PH 200 Philosophy of Being, Knowledge, and God

A critical evaluation of answers to the most general questions of human existence: What is there? How do we know it? How did it come to be?
Category 2.

PH 210 Existentialism and Contemporary Philosophy

An in-depth study of the continental tradition in philosophy.
Category 2.

PH 220 History of American Philosophy

A general overview of the American contribution to the development of Western philosophy.
Category 2.

PH 230 Religious Philosophies, East and West

An examination of the major religious systems, both oriental and occidental.
Category 2.

PH 300 Philosophy of History

Prerequisite: One semester of philosophy.
A study of the meaning and value of history for human life.
Category 3.

PH 310 Philosophy of Art

Prerequisite: One semester of philosophy.
An investigation of the nature of aesthetic experience.
Category 3.

PH 320 Philosophy of Education

Prerequisite: One semester of philosophy.
A philosophical critique of current educational practices in light of the generally accepted purposes of education.
Category 3.

PH 330 Philosophy, Human Potentiality, and Consciousness

Prerequisite: One semester of philosophy.
The application of philosophical knowledge to the problems of creative self-actualization and consciousness.
Category 3.

PH 400 Seminar: Topics in Philosophy

Prerequisite: One semester of philosophy.
Specific subject matter chosen by the department in conjunction with student need and demand.
Category 3.

PH 410 Independent Study in Philosophy

Prerequisite: Consent of department and instructor.
Tutorials in areas of philosophy not covered in normal course offerings.
Category 1. 1-3 credits.

GRADUATE COURSES

PH8 - 200 Morality and Human Acts: Case Studies

A detailed study of the application of moral principles in such key areas of human endeavor as politics, law, medicine, and business.

PH8 - 215 Philosophical Foundations of Psychology

A discussion of the philosophical problems which gave rise to the study of psychological phenomena, and what relevance such problems have to contemporary psychology.

PH8 - 220 Philosophy of Law

An analysis of the structure and applications of legal systems insofar as they relate to philosophical questions concerning such concepts as responsibility, punishment, and liberty.

PH8 - 225 Political and Social Philosophy

A study of the philosophical problems associated with the attempt to understand the relationship between individuals and the larger social/political groups to which they belong.

PH8 - 245 Aesthetics: Philosophy of Human Creativity

An investigation of aesthetic experience, artistic creativity, and the nature of art objects.

PH8 - 250 Technology, Science, and Nature: A Philosophical Analysis

An inquiry into the conceptual foundations and methods of the natural sciences as well as the applications of scientific discoveries to technological problems.

PH8 - 260 Philosophy of Religion

An examination of the central problems of religion: the relation of faith to reason, the question of God's existence, and the reality of evil.

PH8 - 270 Philosophy, Human Potentiality, and Creative Consciousness

An exploration of existential, humanistic, mystical, and pragmatic philosophies and their relevance to the problems of human fulfillment and creative being.

Physical Education

UNDERGRADUATE COURSES

PE 100 Physical Education Activity Courses

Activities include: archery, badminton, basketball, candlepin bowling, dance (aerobic, ballroom, folk, square, tap) fitness and weight control, flag football, floor hockey, golf, gymnastics, hiking, ice skating, racquetball, relaxation, sailing, soccer, softball, swimming, team handball, tennis, volleyball, weight training, yoga, and health fitness.

Category 1.

HE/PE 140 Introduction to Creative Arts Therapies

An experiential and didactic introduction to the separate arts therapies: movement, art, music, and language arts emphasizing the creative process.
Category 3.

PE 160 Contemporary Concepts in Physical Education

Investigatory approach to contemporary physical education, including a critical overview of philosophy, objectives and curriculum development.
Category 2.

PE 175 Principles of Coaching

The values, relationships, and skills necessary to coach children and young adults in competitive athletics.
Category 2.

PE/SO 190 Sport and Society

Analysis of sport as a social system; the implications of sport within interrelational contexts with other social systems.
Category 2.

PE 200 Coaching Football

The techniques in developing an offense and defense. Procedures in scouting opponents and developing game plans are explained.
Category 2.

PE 205 Coaching Team Sports for Men

The techniques and strategies of coaching basketball and baseball.
Category 2.

PE 210 Coaching Team Sports for Women

Techniques and strategies of coaching selected sports. Team selection, conditioning and game situations will be discussed.
Category 3.

PE 215 Coaching Tennis

Selecting, training, strategy and teaching techniques in developing a tennis program.
Category 1.

PE 216 Coaching Swimming

Analysis of swimming strokes and the teaching techniques in developing a swimming program.
Category 1.

PE 217 Coaching Track and Field

The conditioning, selecting, training, strategies and event selection of the various track and field events.
Category 1. 1 credit.

PE 218 Coaching Golf

The selection, training and strategy of golf on an individual and team basis.
Category 1. 1 credit.

PE 220 Techniques of Officiating Basketball

Preparation for local board examination and field test.
Category 1. 2 credit.

PE 221 Techniques of Officiating Field Hockey

Preparation for U.S.F.H.A. national examination and field test.
Category 1. 2 credits.

PE 222 Techniques of Officiating Volleyball

Preparation for U.S.V.B.A. national examination and field test.
Category 1. 1 credit.

PE 225 Fundamentals of Athletic Training

The prevention and treatment of all types of athletic injuries. Anatomy, injury recognition, physiology, and taping are included.
Category 2.

PE 230 Mechnical Analysis of Motor Activities

A proper utilization of scientific principles is essential. Laws of physics, motion, mathematics, psychology, and physiology are applied to specific sports.
Category 2.

PE 235 Intramural Athletics

Planning and implementing intramurals in schools, selecting teams, tournaments, scheduling, officiating, financing and promoting the program.
Category 2.

PE 240 Athletic Programs

Financing, scheduling, awards, facilities, game administration and, evaluating boys' and girls' sports in high school.
Category 1.

PE 245 Recreational Programs

Planning, promoting, conducting, financing and evaluating sports, social, cultural and special events in public and private recreation programs.
Category 1.

PE 250 Physical Education in the Elementary School

Methods and techniques of teaching elementary physical education; emphasis on games, gymnastics, dance and physical fitness.
Category 1.

PE 255 Movement Education

Creative, individualized, problem solving approach to teaching physical education, utilizing the elements of movement and body awareness.
Category 1.

PE/HE 260 First Aid: Advanced Theory and Skill

Common emergencies, cardiopulmonary resuscitation, auto extraction, and emergency childbirth. Opportunity for instructor rating.
Category 3.

PE 270 Physical Education/Recreation for Special Populations

Prerequisite: PE 250, PE 255 or consent of the instructor.
Focus on the movement-related needs, interests and abilities of the disabled and adapting physical activities to meet individual needs.
Category 2.

PE/HE 275 Fitness for Life

Knowledge of health-related fitness components and their effect on total wellness; emphasis on developing personalized fitness programs, namely cardiovascular endurance.
Category 1.

PE/HE 280 Individualized Stress Management and Relaxation

Knowledge of the causes, symptoms and related disorders of stress; emphasis on techniques of coping including relaxation.
Category 1.

PE 290 Advanced Life-Saving

Rescue and water safety; emphasis on self-rescue skills and skill in rescuing or assisting persons in danger of drowning.
Category 1.

PE 292 Water Safety Instructor

Prerequisites: Current ARC Advanced Life Saving Certificate (and either ARC Swimmer's Certificate or ability to perform such skills).
Detailed study of swimming and life-saving skills; emphasis on the development of teaching techniques.
Category 1. 2 credits.

PE 294 Adapted Aquatics

Prerequisite: Water Safety Instructor Certificate or consent of instructor.
Symptoms and characteristics of the disabled and their limiting effect in aquatics; emphasis on adapting strokes to the individual.
Category 1. 2 credits.

PE 400 Independent Study in Physical Education/Coaching

Prerequisite: Consent of department.
Opportunity to engage in research in an area of special interest not covered in elective course offerings.
Category 1.

PE 410 Field Experience in Physical Education/Coaching

Prerequisite: Consent of department.
A fifty-hour directed experience in organizing and conducting either physical education or coaching activities at the elementary or secondary level.
Category 1. 2 credits.

GRADUATE COURSES

PE/HE8 - 115 Introduction to Creative Arts Therapies

An experiential and didactic introduction to the separate art therapies: movement, art, music, and language arts emphasizing the creative process.

PE8 - 210 Coaching Techniques

Teaching and learning guidelines, utilizing psychology in coaching, techniques in handling the individual competitor, and team sport problems.

PE8 - 220 Techniques of Teaching Team Sports

The coaching of specific sports on various grade levels is covered. Teaching techniques, strategies, and essential fundamentals.

PE8 - 230 Scientific Principles of Coaching

The principles and mechanics of motion are applied to a variety of physical activities to improve performance without wasted energy and effort.

PE8 - 240 Techniques of Athletic Training

Designed for the coach who must perform training duties.

PE/HE8 - 250 Stress Management

Assessment of personal stressors, causes and symptoms of stress and related disorders; emphasis on intervention and management techniques.

PE8 - 260 Field Techniques in Coaching Football

Teaching the skills and techniques of each position in developing the 52 defense and the pro offense.

Physics

UNDERGRADUATE COURSES

PY 105 Concepts of Physics I

Descriptive presentation of the fundamental concepts of classical physics: motion, energy, momentum, conservation principles and a consideration of the properties of matter.
Category 1.

PY 106 Concepts of Physics II

A qualitative approach to the fundamental notions of modern physics such as electromagnetic radiation, field theory, atomic spectra and relativity.
Category 1.

PY 107 Physics of Urban and Environmental Problems

Motion and the use of energy sources in the context of several urban and environmental problems; analysis will be physical and qualitative.
Category 3.

PY 114 Physics of Music

Introductory mechanics and wave principles applied to musical acoustics; demonstrations of musical instruments and measuring.
Category 3.

PY 115 General Physics I

Prerequisite: One year of algebra, which may be taken concurrently.
The mechanics of fluids and solids, properties of matter, and heat energy; three lectures and one two-hour laboratory.
Category 1. 4 credits.

PY 116 General Physics II

Prerequisite: PY 115.
Continuation of PY 115; sound, theories of light, electricity and magnetism, and topics in modern physics; three lectures and a two-hour laboratory.
Category 3. 4 credits.

PY 120 Physics I

Prerequisite: One year of calculus which may be taken concurrently.
Introduction to classical physics with emphasis on fundamental principles and conservation laws; three lectures and one two-hour laboratory.
Category 1. 4 credits.

PY 121 Physics II

Prerequisite: PY 120.
Continuation of PY 120; properties of electric and magnetic fields; three lectures and one two-hour laboratory.
Category 1. 4 credits.

PY 201 Mathematical Physics I

Prerequisite: Calculus I and II.
Applied mathematics for students majoring in science or mathematics; power series, complex numbers, determinants and matrices, partial derivatives.
Category 3.

PY 202 Mathematical Physics II

Prerequisite: PY 201.
Continuation of PY 201; vector analysis; Fourier series, ordinary differential equations.
Category 3.

PY 210 Mechanics I

Prerequisites: PY 121 and PY 201, which may be taken concurrently.
Kinematics and dynamics of point masses, the conservation laws, motion of a system of particles; three lectures and one two-hour laboratory.
Category 2. 4 credits.

PY 211 Mechanics II

Prerequisite: PY 210.
Continuation of PY 210; continuum mechanics, mechanics of rigid bodies, Lagrange's equations; three lectures and one two hour laboratory.
Category 3. 4 credits.

PY 215 Biological Physics I

Prerequisite: Six hours of biological science or consent of instructor.
Traditional areas of introductory physics, such as mechanics, heat, sound, with emphasis on bio-instrumentation; two lectures and one two-hour laboratory,
Category 3.

PY 216 Biological Physics II

Prerequisite: PY 215.
Continuation of PY 215; research project required; two lectures and one two-hour labortory.
Category 3.

PY 220 Thermodynamics

Prerequisites: PY 121 or PY 116 and PY 201 which may be taken concurrently.
Introduction to thermodynamics and statistical mechanics.
Category 3.

PY 230 Electricity and Magnetism I

Prerequisite: PY 210 which may be taken concurrently.
The laws of electricity and magnetism in Maxwell's differential form; three lectures and one two-hour laboratory.

PY 231 Electricity and Magnetism II

Prerequisite: PY 230.
Continuation of PY 230, solution of Laplace's equation, further consideration of Maxwell's equations; three lectures and one two-hour laboratory.
Category 1. 4 credits.

PY 240 Optics

Prerequisite: PY - 116 or PY - 121.
Reflection, refraction, diffraction, interference and polarization; the wave model of light.
Category 2.

PY 250 Instrumentation and Electrical Measurement

Electricity and electrical circuits, electronic theory and instrumentation; transducer response in scientific measurements, control elements and recording devices.
Category 3.

PY 260 Analog and Digital Electronics I

Prerequisite: MA 110.
Basic principles of digital and linear integrated circuits. Laboratory on direct-current circuit elements and theorems; breadboard testing of digital and operational amplifier applications; three lectures and a two-hour laboratory.
Category 3. 4 credits.

PY 261 Analog and Digital Electronics II

Continuation of PY 260; additional applications of digital integrated circuits; three lectures and a two-hour laboratory.
Category 3. 4 credits.

PY 300 Investigation of Special Topics in Physics

Prerequisite: Consent of Instructor.
Guided study course which offers an opportunity to make an in-depth study of a special topic in physics.
Category 3. 1-3 credits.

PY 310 Modern Physics

Prerequisites: One year each of physics and calculus.
The atomic nature of matter, special relatively, atomic models, the wave nature of matter, and radioactivity.
Category 1.

PY 320 Quantum Mechanics

Prerequisite: PY 231.
The uncertainty principle, wave-particle duality, the Schrodinger equation, probability amplitudes, and applications to one-dimensional problems.
Category 3.

PY 330 Senior Physics Laboratory

Prerequisite: PY 231 or consent of instructor.
Laboratory work designed to meet the individual needs of students. One three-hour laboratory period per week.
Category 2.

PY/BI 451 Nuclear Instrumentation I

Prerequisite: Consent of NMT coordinator.
The structure, functions, and interactions of particulate and non-particulate radiations with matter; detection, calibration, dosage, and statistical methods.
Category 1. 4 credits.

PY/BI 452 Nuclear Instrumentation II

Prerequisite: Consent of NMT coordinator.
Designed to further the skills of operating, calibrating, and performing routine maintenance on scanners, gamma cameras, well counters, and liquid scintillation counters.
Category 1. 4 credits.

Political Science

UNDERGRADUATE COURSES

PO 101 Principles of Political Science

An introduction to political analysis; study of the concepts of power, legitimacy, natural law, justice, and liberty.
Category 1.

PO 102 Constitutions: U.S. and Massachusetts

Examines the origins and development of the United States and Massachusetts Constitutions. Meets Massachusetts General Laws, Chapter 73, Sec. 2A requirement.
Category 1.

PO 201 International Relations I

Prerequisite: Consent of instructor.
The theory of international relations and important contemporary problems.
Category 1.

PO 202 International Relations II

Prerequisite: Consent of instructor.
A continuing consideration of the theory of international relations and important contemporary problems.
Category 1.

PO 210 American Government

Prerequisite: PO 101.
Examines our national government and politics.
Category 1.

PO/HI 211 History of U.S. Foreign Policy I

Colonial origins to the era of the Spanish-American War. The sources and development of U.S. foreign policy in that period.
Category 1.

PO/HI 212 History of U.S. Foreign Policy II

From 1900 to recent times: U.S. foreign policy traditions and the challenges of great power status.
Category 1.

PO 215 State and Local Government

Prerequisite: PO 101.
Examines sub-national governments and politics in the United States; the structure and problems of these governments.
Category 1.

PO 216 Political Parties and Pressure Groups

Prerequisite: PO 101 or consent of instructor.
Examines the organization, functions, and methods of political parties; the role of interest groups in the American political process.
Category 1.

PO 217 The Legislative Process

Prerequisites: PO 101 and PO 210 or consent of instructor.
The nature and function of the U.S. Congress, including legislative campaigns, politics, and major problems of Congress.
Category 3.

PO/HI 218 U.S. Constitutional History I

The development of constitutional history as seen in decisions of the U.S. Supreme Court and their effects from 1789 to 1921.
Category 1.

PO/HI 219 U.S. Constitutional History II

Supreme Court decision-making from 1921: federal-state relations, civil liberties, civil rights, loyalty program, labor, rights of defendants.
Category 1.

PO 220 Comparative Politics I

Prerequisite: PO 101.
A comparative study of the politics and governments of Great Britain, West Germany, and the Soviet Union.
Category 1.

PO 221 Comparative Politics II

Prerequisite: PO 101.
A comparative study of the political and social systems of South Africa and India, including recent trends in their political development.
Category 1.

PO 222 Government and Politics of Latin America

Prerequisite: PO 101 or consent of instructor.
The political organization, problems, and possibilities of representative Latin-American countries. Special emphasis will be given to crisis areas.
Category 3.

PO 330 Politics of the Middle East I

Prerequisite: PO 101 or consent of instructor.
Discusses governments and politics of eastern Arab countries, Turkey, Iran, and Israel. International rivalries in the area are also discussed.
Category 1.

PO 331 Politics of the Middle East II

Prerequisite: PO 101 or consent of instructor.
Discusses liberation of North African countries from imperialism: politics of independent, nation-building, and international rivalries in the area.
Category 1.

PO 338/HI 310 History of Political Theory I

Prerequisite: Completion of sophomore year or consent of instructor.
The development of political thought from the Greeks to the Enlightment.
Category 2.

PO 339/ HI 311 History of Political Theory II

Prerequisite: Completion of sophomore year or consent of instructor.
The development of political thought from the Enlightenment to the present.
Category 2.

PO 350 Soviet Government and Politics

Prerequisite: PO 101 or consent of instructor.
An analysis of the forces and institutions which have influenced political developments in the Soviet Union since 1917.
Category 2.

PO 351 Comparative East European Government and Politics

Prerequisite: PO 101 or consent of instructor.
An analysis of the political developments in the East European nations since World War II.
Category 3.

PO 355 Soviet Foreign Policy

Prerequisite: PO 101 or consent of instructor.
Instruments of Soviet foreign relations; an analysis of Russian foreign affairs since 1917.
Category 2.

PO 360 The Government and Politics of China

Prerequisite: PO 101 or consent of instructor.
Political and international developments of modern China; Communist ideology and instruments of power.
Category 3.

PO 370 Crisis Politics

Prerequisite: PO 101 or consent of instructor.
This course will analyze the theories regarding the roots of violence, revolution, and terrorism. Special attention will be devoted to violence in America.
Category 2.

PO 380 American Foriegn Policy Since the Cold War

Prerequisite: PO 101, HI 112, or consent of instructor.
Instruments of American foreign policy; major foreign policy developments since 1947.
Category 2.

GRADUATE COURSES

PO8 - 115 Soviet Political Institutions

Examines major political developments in the Soviet Union from Lenin to the present. Special consideration to the role of the party, the relations between the party and the military, and the nature of dissent.

PO8 - 180 American Foreign Policy

An analysis of the formulation of American foreign relations, as well as a consideration of developments since the Cold War.

PO8 - 330 The Modern Presidency

This course will examine the evolution of the presidency. Special attention is given to those presidents who have expanded the office.

PO8 - 520 Soviet Foreign Policy

A study of the forces that determine the conduct of Soviet foreign relations, emphasizing the period since 1945.

Psychology

UNDERGRADUATE COURSES

PS 110 General Psychology I

The history of psychology; scientific method; brain and nervous system; developmental psychology; learning; motivation and perception.
Category 1.

PS 111 General Psychology II

Personality theory; psychopathology; psychotherapy; cognition; social behavior; and careers in psychology.
Category 1.

PS 120 Human Development

The study of the elements of change and constancy over the life span in orderly and sequential stages as the organism moves from conception to death. Processes by which the organism is transformed through interaction with the environment.
Category 1.

PS 130 Psychology of Adjustment

Basic principles of personality development and mental health are introduced. Factors contributing to adjustive behavior and stress mangement are considered.
Category 1.

PS 200 History and Systems of Psychology

Prerequisites: PS 110, PS 111.
An historical perspective on psychology, tracing the development of psychology into a science.
Category 1.

PS 210 Child Growth and Development

Prerequisite: PS 110.
Physical, social, emotional, intellectual, and moral development from conception to adolescence is examined within a framework of various theories.
Category 1.

PS 212 Child Psychology

Prerequisite: PS 110.
A critical review of the major theories and research in the field of child psychology, emphasizing contemporary viewpoints and problems.
Category 3.

PS 215 Psychology of Adolescence

Prerequisite: PS 110.
The mental, emotional, social and physical changes of contemporary adolescence are examined with emphasis on family, peer and school influences.
Category 1.

PS 220 Psychology of Aging

Prerequisite: PS 110.
Adulthood and old age are studied with special emphasis on current developmental theories.
Category 1.

PS 225 Psychology of Learning

Prerequisite: PS 110.
Learning is a fundamental concept in understanding behavior; examines principles and theories of learning, emphasizing experimental findings.
Category 3.

PS 240 Abnormal Psychology

Prerequisite: PS 111
Etiology, dynamics, and treatment of psychopathology and their relation to normal personality are considered from traditional and contemporary perspectives.
Category 1.

PS 250 Social Psychology

Prerequisite: PS 111.
The psychological dynamics of social interaction including verbal and nonverbal communication, group dynamics and attitude formation and change.
Category 1.

PS 260 Psychology of Human Sexuality

Prerequisite: PS 110.
Sexuality is a foundation of personality. The wide range of human sexuality is explored: sexual development, roles, attitudes and behaviors.
Category 2.

PS 265 Psychology of Marriage

Prerequisite: PS 111.
Marriage and alternatives are explored, focusing on personal growth, partner selection, loving styles, communication, sex, crises, and termination of relationships.
Category 3.

PS 280 Sensation and Perception.

Prerequisite: PS 110.
Selected sensory and perceptual processes are studied in the context of current theory and research.
Category 3.

PS 285 Motivation

Prerequisite: PS 110.
A study of conditions that arouse, sustain, and direct behavior. Topics include frustration, conflict, stress, instinct, and emotions.
Category 3.

Prerequisite: 300 Psychological Statistics

Prerequisite: Completion of sophomore year or consent of instructor.
Data tabulation; graphing; measurement of central tendency, variability, and correlation; and hypothesis testing applied to psychological data.
Category 1.

PS 305 Psychological Methods

Prerequisite: PS 300, completion of sophomore year or consent of instructor.
The design, conduct, analysis and reporting of research are stressed. A broad range of laboratory experiments and demonstrations are conducted.
Category 1.

PS 310 Introduction to the Study of Exceptional Children

Prerequisites: PS 110, PS 111.
Characteristics and needs of children with exceptionalities: retardation, giftedness, physical or sensory disabilities, emotional or social maladjustments.
Category 1.

PS 312 Psychology of Subnormal and Unadjusted Children

Prerequisites: PS 110, PS 111.
The psychology and treatment of children having inferior intellectual ability and/or social or emotional adjustment problems.
Category 2.

PS 315 Psychology of the Culturally Deprived

Prerequisites: PS 110, PS 111.
Investigation of problems of identifying culturally-deprived children, determining individual needs and responding appropriately to their needs.
Category 3.

PS 330 Theories of Personality

Prerequisites: PS 110, PS 111.
A survey of major theories of personality. Why people behave as they do is explored through the different theories.
Category 1.

PS 340 Introduction to Psychometrics

Prerequisites: PS 110, PS 111.
Methods and instruments which are used in the evaluation of the psychological attributes of human beings are studied.
Category 1.

PS 350 Group Dynamics

Prerequisite: PS 110.
Group process deals with the basic issues of leadership, membership, developmental stages and types of groups, theoretically and experientially.
Category 2.

PS 360 Industrial Psychology

Prerequisite: PS 110.
A concentration on the work of the psychologist in business and industry in the public and private sectors.
Category 2.

PS 380 Physiological Psychology

Prerequisites: PS 110, PS 111.
Psychobiological problems: current physiological research in emotion, motivation, and learning, and the use of physiological methods in psychology.
Category 3.

PS 400 Internship in Psychology

Prerequisite: Completion of junior year and consent of instructor.
Student interns work part-time in joint supervision of the department and agency officials.
Category 1. 1-3 credits.

PS 405 Independent Study in Psychology

Prerequisites: PS 110, PS 111, PS 200, PS 300, PS 305, and consent of instructor.
Student will pursue an area of special interest through research or field work under close supervision of a faculty member.
Category 1. 1-3 credits.

PS 410 Seminar in Developmental Psychology

Prerequisites: PS 110, PS 111, PS 210, PS 215.
Patterns of physical, mental and emotional development are explored with emphasis on independent work.
Category 3.

PS 430 Encounter: Theory and Practice

Prerequisites: PS 110, PS 111, and consent of instructor.
A basic encounter group experience; emphasizing increased personal and interpersonal sensitivity; assigned readings, journal writing, and analysis.
Category 2.

PS 435 Clinical Psychology

Prerequisites: PS 110, PS 111, PS 240.
Practical issues, methods and techniques of current psychotherapies with emphasis on psychoanalytic, client-centered, and behavioral approches.
Category 3.

PS 440 Individual and Group Psychotherapy

Prerequisites: PS 110, PS 111.
Theoretical and eclectic approaches to individual and group psychotherapy are studied.
Category 3.

PS 450 Existential Humanistic Psychology

Prerequisites: PS 110, PS 111, and consent of instructor.
Orientation to the existential humanistic theories of psychology, phenomenological approaches to behavior, personality, and psychotherapy.
Category 3.

PS 480 Advanced Experimental Psychology

Prerequisites: PS 110, PS 111. PS 300.
Laboratory procedures and techniques are studied on an advanced level applied to selected independent projects.
Category 3.

PS 485 Introduction to Neuropsychology

Prerequisite: Consent of instructor.
Human brain behavior relationships; neurological correlates of attention, cognition, perception, consequences of damage upon behavior.
Category 3.

PS 495 Special Topics in Psychology

Prerequisites: PS 110, PS 111, and consent of instructor.
Selected areas of mutual interest to instructor and students. Topics and prerequisites are announced in advance.
Category 1.

GRADUATE COURSES

PS8 - 220 Human Growth and Development

The life span of the person is examined through the developmental processes of growth, sexuality, learning, creativity, and organization.

PS8 - 230 Psychology of Adjustment

Adjustive behavior and personality are scrutinized on theoretical and experiential levels utilizing techniques such as role-playing and psychodrama.

PS8 - 240 Introduction to Clinical and Counseling Psychology

Prerequisites: PS 110, PS 111.
Theories, methods and techniques used in the clinical and counseling processes are surveyed.

PS8 - 325 Psychology of Learning

Prerequisite: PS 110.
An in-depth analysis of learning operations, major learning theories, and applications of learning principles to human behavior.

PS8 - 340 Advanced Abnormal Psychology

Prerequisites: PS 110, PS 111.
The etiology, dynamics and treatment of psychopathology are studied through lecture, discussion and independent reading and research.

PS8 - 410 Dynamics and Etiology of the Emotionally Disturbed Child

Prerequisites: PS 110, PS 111.
Theory and research on behavior disorders of children are examined in detail with emphasis on causes, evaluation, and treatment.

PS8 - 425 Principles of Behavior

Prerequisites: PS 110, PS 111.
The history and basic concepts of behavior modification are introduced.

PS8 - 535 Clinical Psychology

Prerequisite: PS8 - 340 or PS 240.
Study of traditional and innovative approches to psychotherapy and counseling.

PS8 - 715 Special Class Methods

Curriculum development and teaching techniques for special classes.

PS8 - 725 Behavior Modifications in the Schools

Students learn to apply behavior modification techniques to a wide range of problems of school children and to assess results.

PS8 - 860 Contemporary Problems and Issues in Industrial Psychology

Psychological implications of, and possible solutions to, contemporary scientific, legal, and economic problems of business.

PS9 - 150 Psychodiagnostic Techniques

Survey of psychodiagnostic techniques, instruments, and methods employed in evaluating and diagnosing psychological factors. Theoretical issues in psychodiagnosis are also discussed.

PS9 - 410 Psychology of Exceptional Children

The psychology and treatment of children having superior or inferior intellectual ability, defective vision, hearing, speech, or other physical handicaps.

PS9 - 495 The Illinois Test of Psycholinguistic Abilities

The rationale, administration, and interpretation of the Illinois Test of Psycholinguistic Abilities.

PS9 - 590 Issues in School Psychology

Emphasis on the legal and professional responsibilities of school psychologists. Special techniques of testing and evaluation are considered.

PS9 - 605 Psycho-Educational Prescriptions

Prerequisite: Minimum of 15 graduate credits completed.
Techniques of, and supervised practice in, psycho-educational assessment leading to psychological or educational prescriptions

PS9 - 785 Psychology of Subnormal and Unadjusted Children

Prerequisites: One year each of general psychology, abnormal psychology.
A study of the psychological and educational factors involved in the classification, diagnosis, and counseling of the retarded. Various approaches to the treatment of subnormal and unadjusted children in relation to the family, school, and community will be examined.

PS9 - 980 Practicum in School Psychology I

Prerequisite: Students enrolled in M.Ed./CAGS in school psychology who have completed 42 credits.
Students work 300 clock hours under supervision of a certified practicing school psychologist in K-12 settings; weekly seminars.
6 credits.

PS9 - 985 Practicum in School Psychology II

Prerequisite: PS9 - 980.
Students work 300 clock hours under qualified psychological supervision in a school, hospital, or clinic; weekly seminars.
6 credits.

Sociology

UNDERGRADUATE COURSES

SO 100 Introduction to Sociology

The nature of group behavior and social interaction viewed through analysis of the structure, norms, and values of human groups.
Category 1.

SO 110 Cultural Anthropolgy

Cross-cultural analysis of the human capacity for adaptation and technological and ideological development. Significant field studies will be examined.
Category 1.

SO 120 Courtship and Marriage

American customs of courtship and marriage, past and present; marital law, and analysis of mate selection and marital roles.
Category 1.

SO 130 Race and Ethnicity

Dynamic processes and patterns of inter-group relations with special emphasis on socially perceived racial and ethnic variables.
Category 3.

SO/PE 190 Sport and Society

Analysis of sport as a social system. The implication of sport within interrelational contexts with other social systems.
Category 1.

SO 200 Contemporary Social Problems

Prerequisite: SO 100 or SO 110.
Analysis of social, political, urban, and industrial changes which have introduced specific problems into contemporary society.
Category 1.

SO 210 Society, Science, and Technology

Prerequisite: SO 100 or SO 110.
Relationships and patterns of social issues created by the nature of scientific and technological advances.
Category 3.

SO 215 Medical Sociology

Prerequisite: SO 100 or SO 110.
The structure of health care delivery systems and role interaction between levels of health care personnel, patients, and families of patients.
Category 3.

SO 220 Sociology of the Family

Prerequisite: SO 100 or SO 110.
A comparative approach to the study of the structure of family systems with emphasis on changing patterns of family life.
Category 3.

SO 230 Political Sociology

Prerequisite: SO 100 or SO 110.
Foundations of social movements in political phenomena, social conditions, and emerging political institutions; the structural basis of social change and politics.
Category 3.

SO 240 Sociology of Education

Prerequisite: SO 100 or SO 110.
Study of American education, emphasizing the social, political, and economic factors that influence it, as well as its institutional structure.
Category 3.

SO 250 Sociology of Religion

Prerequisite: SO 100 or SO 110.
Comparative study of systems of belief and religious institutions with emphasis on natural and mystical components of religious phenomena.
Category 3.

SO 258 Statistics

Prerequisite: SO 100 or SO 110.
Data tabulation and reduction, measures of central tendency, variability, correlation, prediction, and association. (PS 300 may be substituted.)
Category 3.

SO 270 Social Theory I

Prerequisite: SO 100 or SO 110.
Fundamental concepts and intellectual traditions, especially the contributions of Comte, Spencer, Marx, Toennes, Durkheim, and Simmel.
Category 3.

SO 280 Research Methods of Sociology

Prerequisite: SO 100 or SO 110.
An analysis of the research function in sociology, the conduct of research appropriate to undergraduate students, and the formal presentation of research papers.
Category 1.

SO 300 Social Change

Prerequisite: Two courses at 200 level.
Causes, characteristics, and consequences of change in the established patterns of interaction and behavior in society.
Category 3.

SO 310 Formal Organizations

Prerequisite: Two courses at 200 level.
The structure and function of, and communications systems within, formal and complex organizations; primary focus on theoretical aspects of organizations.
Category 3.

SO 315 Collective Behavior

Prerequisite: Two courses at 200 level or consent of department.
Processes by which new norms and forms of social organization emerge from group behavior, aggregate behavior, and social movements.
Category 3.

SO 330 Criminology

Prerequisite: Two courses at 200 level or consent of department.
Theoretical perspective on crime, criminals, and the social aspects of interrelationships within, and between, the components of the criminal justice system.
Category 3.

SO 335 Juvenile Delinquency

Prerequisite: Two courses at 200 level or consent of department.
Social and legal phenomena surrounding youthful offenses and offenders, considered in the context of community response to the problem.
Category 3.

SO 340 Social Psychology

Prerequisite: Two courses at 200 level or consent of department.
Dynamics of small group involvement and other environmental influences on the shaping of an individual's personality.
Category 3.

SO 345 Sociology of Deviance

Prerequisite: Two courses at 200 level.
The study of the social consequences and apparent causes of deviant behavior through the analysis of the processes of socialization, intra- and inter-group relations, and the social contexts within which deviation is defined.
Category 3.

SO 350 Social Stratification

Prerequisite: Two courses at 200 level.
Recurrent patterns of inter-group contact, differentiation, ranking, and evaluation; theories and concepts which explain the development process of open and closed societies; characteristics of stratification systems and their pervasive influence on social institutions.
Category 1.

SO 360 Urban Sociology

Prerequisite: Two courses at 200 level or consent of department.
A cross-cultural study of urban social systems and the phenomena and problems connected with the planning process.
Category 3.

SO 370 Social Theory II

Prerequisite: SO 270, two courses at 200 level, or consent of department.
The development of conflict theory with emphasis on the contributing theorists of the behavioristic schools.
Category 3.

SO 375 Contemporary Social Theory

Prerequisite: SO 270, SO 370, or two courses at 200 level.
Analytical devices, conceptual schemes, and models used by contemporary theorists with emphasis on structural sociology.
Category 3.

SO 390 Sociology of Mental Health

Prerequisite: Two courses at 200 level or consent of department.
The social definition of mental illness which contributes to social disorder, and its treatment and prevention.
Category 3.

SO 400 Independent Study

Prerequisite: Eight prior courses in sociology or consent of department.
For advanced sociology majors only; topic to be approved by an independent study advisor.
Category 1. 1-3 credits.

SO 410 Field Work

Prerequisite: Eight prior courses in sociology or consent of department.
Data collection based on participant observation within a social service organization; assignment approval by field-work advisor.
Category 1. 1-6 credits.

SO 420 Seminar in Sociology

Prerequisite: Eight prior courses in sociology or consent of department.
Advanced study topics in selected areas of sociology; announcement made at pre-registration time.
Category 3. 1-3 credits.

GRADUATE COURSES

SO8 - 410 Sociology of Death

Theories and studies of grief and bereavement; problems of terminal patients; death-denial styles of mourning; sociology of mortuary attitudes and comparative studies of death.

SO8 - 425 Seminar in Sociology — Crisis in the American Family: Separation and Divorce

Considerations of the questions of separation and divorce from a socio-methodological approach. Literature in the field will be examined in terms of trends and problems encountered by participants in such proceedings.

SO8 - 430 Seminar in Sociology — Crisis in the American Family: Violence — The Battered Child and The Battered Wife

Two vital problems of American family life: the battered child and the battered wife. Contemporary writings both scholarly and popular will be used.

SO8 - 435 Seminar in Sociology — The Sexual Revolution

Prerequisite: Consent of instructor.
Examination of the changing sexual norms of American society; changes in the legal definitions of obscenity, pornography, consenting adults, cohabitation, etc.

SO8 - 450 Sociology of Religion

Intensive analysis of belief systems and formal organizations which have developed from man's search through natural and mystical phenomena for the meaning of life.

SO8 - 460 Application of Social Psychology

The dynamics of groups with emphasis on the individual within the context of sociological influences. Consideration is given to interpersonal relations, socialization, and symbolic interaction.

SO8 - 470 Seminar in Research Methods

Prerequisite: SO 100.
Designed to prepare students for undertaking research projects; research methodology and presentation of data; field problems used.

Urban Studies

UNDERGRADUATE COURSES

UR 101 Introduction to Urban Sysems

A broad contextual overview of urban life that examines from a systems perspective the relationship of man and his environment.
Category 1.

UR 201 Analysis of Urban Systems

Prerequisite: UR 101 or consent of instructor.
Analysis of activities, programs, and policies designed to sustain and enhance the livability of an urban environment.
Category 1.

UR 212 American Metropolitan Evolution

Prerequisite: UR 101 or consent of instructor.
Development of metropolitan America from a multi-disciplinary approach with emphasis upon dynamics of urban growth, internal development of cities, immigrations, socio-economic stratification, metropolitanization, and problems deriving from growth.
Category 2.

UR 213 Human Identity and the Urban Environment

Prerequisite: UR 101 or consent of instructor.
Study of factors affecting identity in contemporary urban settings including race, ethnicity, class, age, and sex categories and roles.
Category 1.

UR 301 Cities and Suburbs

Prerequisite: UR 101 or consent of instructor.
Multi-disciplinary study of city-suburban growth patterns and problems including those of the past those that hamper metropolitan cooperation and affect the quality of life of both city and suburban residents and businesses.
Category 1.

UR 305 Group Conflict in the Urban Community

Prerequisite: UR 101 or consent of instructor.
Study of conflict and its resolution in contemporary urban settings. Personal, small group, and societal strategies for conflict resolution will be explored.
Category 2.

UR 306 Interviewing and Counseling Techniques

Prerequisite: Consent of instructor.

Investigation of skills and process of interviewing and counseling with emphasis upon both theory and practice, participant exercises, and development of helping skills and effective counseling relationships.
Category 1.

UR 310 Power, Politics, and Decision-Making in Urban Communities

Prerequisite: UR 101 or consent of instructor.
Exploration from multi-disciplinary approach of social power and its relation to decision-making in urban communities. Emphasis on theories of power, understanding research methodologies, and policy implications.
Category 1.

UR 311 Community Politics and Policies

Prerequisite: UR 101 or consent of instructor.
Political behavior and perceptions in cities and towns from a multidisciplinary perspective with emphasis on how policy is initiated, developed, and implemented in various governmental forms.
Category 1.

UR 320 Human Needs and Social Services

Prerequisite: UR 101 or consent of instructor.
Analysis of human needs as they change over a life span; why needs go unmet, and the role of human services in meeting needs.
Category 1.

UR 321 Social Work in the Urban Society

Prerequisite: UR 101 or consent of instructor.
Overview of approaches used by social work professionals in assessing and meeting needs, including case work, community organization, and planning.
Category 1.

UR 325 Social Casework in the Urban Setting

Prerequisite: UR 101 or consent of instructor.
Introduction to various social work approaches — client-centered, task-centered, Gestalt, Carhuff, reality therapy; role playing and counseling simulations utilized.
Category 1.

UR 326 Career Planning in Urban Society

Prerequisite: UR 101 or consent of instructor.
Research of the urban employment market, occupational sources, basic interviewing techniques, developing a job brief, and elaboration of a career plan.
Category 1.

UR 330 Justice in the Urban Society

Prerequisite: UR 101 or consent of instructor.
Theoretical perspectives on the mission of the criminal justice system and the daily operation of its sub-components.
Category 1.

UR 331 Crime and the City

Prerequisite: UR 101 or consent of instructor.
Investigation of crime in contemporary urban society and the social, legal, economic, and cultural strategies for dealing with crime and deviance.
Category 1.

UR 340 Urban Housing Dilemma

Prerequisite: UR 102 or consent of instructor.
Analysis of the factors that shape the nature, location, and supply of urban housing with speical focus on federal policies and the housing needs of elders.
Category 3.

UR 341 Urban Health and Social Services Systems

Prerequisite: UR 101 or consent of instructor.
Analysis of health-care planning and delivery systems emphasizing the role of services within these systems and the health needs of elder citizens.
Category 1.

UR 350 Urban Youth in American Society

Prerequisite: UR 101 or consent of instructor.
Role and problems of youth in urban societies viewed from a variety of social science perspectives with additional employment of contemporary music and literature.
Category 1.

UR 351 Public Policy and Youth Services

Prerequisite: UR 101 or consent of instructor.
Role of theory, attitudes, and public opinion in the formation of policies concerning delinquency with exploration of current practices and innovative stragegies.
Category 1.

UR 352 Policy Planning for an Aging Society

Prerequisite: Consent of instructor.
Analysis of current social policies in regard to elders and exploration of ways in which policies need to be altered to meet growing elder needs.
Category 1.

UR 360 Environmental Systems and Public Policy

Prerequisite: UR - 101 or consent of instructor.
Examination of urban ecosystems, focusing on land uses designed to effectively utilize water, open space, and other natural resources.
Category 1.

UR 361 Public Policy and Environmental Issues

Prerequisite: UR - 101 or consent of instructor.
Investigation of the factors that determine the formation of public policy on the environment with consideration of the roles played by state and federal regulatory agencies.
Category 1.

UR 370 Structure and Function of Urban Organizations

Prerequisite: UR 101 or consent of instructor.
Advanced leadership seminar for students interested in pursuing management careers in public and non-profit urban organizations.
Category 1.

UR 401 Research Seminar in Urban Studies

Prerequisite: UR - 101 or consent of instructor.
Research skills for urban-based projects including techniques in gathering, analyzing, and reporting data and various forms of field research.
Category 1.

UR 410 Assigned Research in Urban Affairs

Prerequisite: UR 101 or consent of isntructor
Individual or small group directed research into selected problems and issues in urban affairs.
Category 3.

UR 411 Assigned Readings in Urban Affairs

Prerequisite: UR 101 or consent of instructor.
Directed readings for students interested in special topics related to their academic program of study.
Category 3.

UR 421 Selected Topics in Urban Studies

Prerequisite: UR 101 or consent of instructor.
In-depth examination of topical issues challenging the intellectual and creative interests of advanced students in urban studies.
Category 3.

UR 422 Selected Topics in Gerontology

Prerequisite: Consent of instructor.
In-depth examination of topical issues in gerontology which afford the advanced student the opportunity to pursue gerontological research.
Category 1.

UR 430 Seminar in Current Urban Problems

Prerequisite: UR - 101 or consent of instructor.
Individual and group investigation and research of selected and current urban problems.
Category 1.

UR 440 Practicum in Urban Studies

Prerequisite: UR 101 or consent of instructor.
Directed experiential study for advanced students.
Category 3.

UR 450 Internships in Urban Studies

Prerequisite: Completion of 21 credits in Urban Studies and consent of instructor.
Supervised and intensive semester-long experience in community agencies; weekly group seminar.
Category 1.

GRADUATE COURSES

UR8 - 100 Knowing the City

Introduction to significant social science theory and models that seek to explain urban growth dynamics and various aspects of urbanization.

UR8 - 203 The Urban Experience

Exploration of the varieties of the urban experience from a multidisciplinary approach seeking to identify positive and negative consequences of urban life.

UR8 - 300 The City and Its People

Themes and topics in American urban growth with special emphasis on the Industrial Revolution and migrations together with internal urban dynamics.

UR8 - 307 Advanced Interviewing

Investigation of practice issues in successful interviewing of clients with examination of dependency, anger, withdrawal, manipulation, and counter-dependency.

UR8 - 308 Small Group Dynamics

Experiential approach to the theory, forces, dynamics, and interactive patterns of small groups with emphasis on exaamination of behavior of group participants.

UR8 - 352 Managing Innovative Treatment Modalities

Considers major functional disorders of childhood and adolescence ranging from transient adjustment reaction through prolonged psychotic disturbances. Innovative treatment modalities examined and analyzed.

UR8 - 362 Low Entropy Energy Systems for Urban Dwellings

Evaluation of effective alternate approaches for types of urban energy dwellings including solar, wind, and structural collectors and materials, heat pumps, and low entropy design.

UR8 - 371 Leadership in Organizations

Problems of leadership in primarily metropolitan organizations such as public and human service agencies, health care institutions, and private corporations.

UR8 - 372 Management of Human Resources

Practically-oriented approach to personnel management with focus on organizational behavior, staff selection, supervisory skills, performance evaluation, wage and salary policies, and techniques of employee motivation.

UR8 - 380 Worcester: The Rise of the City and Its People

Study from various social sciences of the evolution of Worcester from frontier hamlet to contemporary post-industrial metropolitan central city. Special focus is on society and its changes and groupings.

UR8 - 381 Worcester Ethnic Seminar

Study employing community visitations of the rich ethnic community development and experience in Worcester.

UR8 - 385 Green Roots: The Irish of Ireland, America, and Worcester

Study of Irish emigration from Ireland to American and especially the establishment and experiences of that ethnic group in Worcester.

UR8 - 431 Seminar in Family Studies

Study of the urban family from a range of theoretical perspectives with focus on poverty, cultural isolation, family networks, and community support.

UR8 - 441 Training Practicum in Group Dynamics

Designed for present and potential group leaders and trainers with focus on individual roles, group processes, techniques of group processes, techniques of group leadership, and relation to program or organization development.

8. Officials of the College

BOARD OF TRUSTEES

John J. Mitchell, Chair
Robert Barros
Francis R. Carroll, Vice Chair
Susan E. Gotz
Patricia Greenlaw
Jordan Levy
Kenneth J. Mangan
Edward Mingolla
Stephen Pezzella, M.D.
James Polito
Frances Whitney

ADMINISTRATION

OFFICE OF THE PRESIDENT

Philip D. Vairo, President of the College (1982)
A. B., Hunter College of the City University of New York; M.A., New York Unversity; Ed.D., Duke University

Linda Doherty, Staff Assistant, Alumni Affairs (1983)
B.S., Worcester State College

Maurice R. Poirier, Director, Community Services (1971)
A.B., Worcester State College

Helen G. Shaughnessy, Director, Personnel (1957)
B.S., Worcester State College; Ed.M., Boston University

Paul F. Stimson, Director, Institutional Advancement and Alumni Affairs (1974)
A.A., Quinsigamond Community College; A.B., Assumption College; Ed.M., Worcester State College; Ph.D., University of Connecticut

OFFICE OF THE EXECUTIVE VICE PRESIDENT

William F. O'Neil, Executive Vice President (1973)
B.S., Boston University; Ed.M., Worcester State College; Dipl. Prof. Ed., University of Connecticut; Ed.D., Wayne State University

OFFICE OF ACADEMIC AFFAIRS

Barbara Leondar, Vice President, Academic Affairs (1980)
A.B., New York University; M.A., California State University; Ed.D., Harvard University

Gerard T. Indelicato, Dean, Undergraduate Studies (1981) (On Leave)
B.S., Ed.M., Bridgewater State College; Ph.D., University of Connecticut

David H. Quist, Dean, Graduate and Continuing Education (1970)
A.B., M.A., Ed.D., Clark University

Richard Sine, Associate Dean, Undergraduate Studies (1971)
A.B., St. John's University; M.A., Boston University; C.A.G.S., Boston College

Robert C. Weber, Associate Dean, Undergraduate Studies (1984)
B.S., Slippery Rock State College; M.A., Miami University; Ph.D., University of Wisconsin

Joan Keller Fischer, Associate Dean, Graduate and Continuing Education (1976)
A.B., Montclair State College; M.A., Seton Hall University; Ed.D., Rutgers University

Caroline Chiccarelli, Assistant Director, Graduate and Continuing Education (1979)
A.B., Newton College of the Sacred Heart; M.A., Fairleigh Dickinson University

Jacqueline LaCoy, Assistant Director, Learning Resources Center (1983)
A.B., Worcester State College

Linda M. Masterson, Staff Assistant, Admissions (1983)
B.S., Worcester State College

Cynthia S. Talbert, Staff Associate, Graduate and Continuing Education (1983)
B.S., Ed.M., Worcester State College

Patricia A. McManus, Staff Assistant, Admissions (1983)
B.S., Worcester State College

Bruce Plummer, Director, Learning Resources Center (1971)
A.B., Ohio Wesleyan University; M.A., Kent State University

Helen E. Prostak, Director of Student Records and Registrar (1965)
B.S., Ed.M., Worcester State College

E. Jay Tierney, Director, Admissions (1978)
A.B., St. Michael's College; Ed.M., Worcester State College; C.A.G.S., University of Massachusetts

OFFICE OF STUDENT AFFAIRS

James J. Rauker, Vice President, Student Affairs (1984)
A.B., M.A., Ph.D., University of Iowa

Paul M. Joseph, Associate Dean, Student Affairs (1971)
A.B., Worcester State College; M.A., Anna Maria College

James R. Alberque, Associate Director, Special Student Services (1973)
B.S., St. Bonaventure University; M.A., University of Cincinnati

Vivian Bartlett, College Nurse (1981)
R.N., St. Vincent Hospital

Sidney Buxton, Director, Minority Affairs (1975)
A.B., M.S., University of Bridgeport

Robert A. Devlin, Director, Athletics (1970)
B.S., College of the Holy Cross; Ed.M., Boston University

Daniel P. Heenan, Staff Associate, Manager, Residential Life (1983)
A.A., Allen County Community College; A.B., M.S., Pittsburg State University, Kansas

Alan Edmond Jackson, Staff Assistant, Operations Manager, Student Center (1983)
A.B., Southeastern Massachusetts University

Oscar Larson, Staff Assistant, Intramural Athletics (1973)

Walter J. Lennon, Director, Placement and Career Development (1974)
A.B., St. John's University; M.A., Anna Maria College

James M. Morrison, College Physician (1974)
A.B, College of the Holy Cross; M.D., St. Louis University

Charles Oroszko, Staff Associate, Counseling Center (1978)
A.B., M.A., C.A.G.S., Assumption College

Colleen Sheehan, Staff Assistant (1983)
B.S., Worcester State College

Eileen Smart, Staff Assistant, Program Advisor (1983)
A.B., Colorado Women's College

Timothy J. Sullivan, Assistant Director, Student Center/Activities (1980)
A.B., Clark University; M.A., Assumption College

Emile Thibault, Associate Director, Computer Services (1983)
B.S. Boston College, M.B.A., Babson College

Francis Vaudreuil, Staff Assistant, Computer Programmer (1979)
A.S., Worcester Industrial Technical Institute

OFFICE OF THE DEAN OF ADMINISTRATION

Angelo Scola, Dean of Administration (1974)
A.B., Clark University; Ed.M. Worcester State College; J.D., New England School of Law

Brian R. Dinsdale, Staff Assistant, Printing and Publications (1982)

William E. Jarvi, Manager, Facilities Operations (1974)

Paul Regan, Director, Facilities (1970)

Louise Pitts Stowe, Director, Affirmative Action (1973)
B.M., New England Conservatory of Music; Ed.M., Boston University; Ph.D., Boston College

OFFICE OF THE TREASURER

William Butler, Director, Fiscal Affairs (1953)
B.S., Clark University

Kenneth Barton, Staff Associate, Fiscal Affairs (1971)

Dorothy Porter, Director, Financial Aid (1978)
B.S., Boston University

PROFESSORS EMERITI

Helen G. Agbay, Department of Spanish	1974
Lawrence A. Averill, Department of Psychology	1974
Vera M. (Dowden) Baldwin, Department of Education	1974
Virginia Ball, Department of Education	1974
Nora M. Barraford, Department of English	1984
J. William Bigoness, Department of Education	1974
M. Kathleen Burns, Department of Education	1983
Walter P. Busam, Department of English	1974
Sr. Josephina Concannon, Department of Education	1976
Mary T. Dolphin, Department of Art	1984
Myra C. Fitch, Department of Education	1974
Yvonne Gallant-Martel, Department of French	1977
Ruth Griffiths, Department of Education	1979
Rose Haroian, Department of Communication Disorders	1979
Mary T. Hayes, Department of Education	1974
Marion J. Jennings, Department of Education	1978
Francis L. Jones, Departments of Sociology and Latin	1974

William D. Joyce, Department of Media	1983
Abram Kaminsky, Department of Music	1982
Grace A. Kendrick, Department of Music	1974
Edward H. Leonard, Department of Natural Science	1984
Catherine Lewicke, Department of Education	1982
Joseph C. Lonergan, Department of Psychology	1984
Marguerite C. McKelligett, Department of French	1974
Rita M. L. Morris, Department of Geography	1984
Francis J. O'Connor, Department of Spanish	1980
J. Francis O'Mara, Department of Education	1977
Carl Peterson, Department of Education	1982
Helga E. Peterson, Department of Education	1974
Joseph W. Riordan, Department of Mathematics	1974
Evelyn Robinson, Department of Mathematics	1978
Carlton E. Saunders, Department of Speech	1973
Joseph P. Scannell, Department of Education	1984
Agnes E. Scribner, Department of Biology	1974
George E. Shaw, Department of Art	1974
Joseph A. Shea, Department of Psychology	1983
Ruth V. Somers, Department of Education	1974
Dorothy Stafford, Department of Physical Education	1974
William L. Sullivan, Department of English	1983
Anthony W. Thurston, Department of Biology	1983
Francis G. Walett, Department of History	1979
Madelin A. Wilmarth, Department of Education	1974

FACULTY

ART

Doris M. Carter, Professor (1967)
B.S., Massachusetts College of Art; M.A. California State University; Ed.D., University of Massachusetts

Jacqueline Casale, Assistant Professor (1967)
A.B., New York University; M.A., Tufts University

Sandra Kocher, Assistant Professor (1970)
A.B., Oberlin College; M.A., Stanford University

Ellen V. Kosmer, Professor (1964)
B.F.A., Massachusetts College of Art; M.A., Western Reserve University; Ph.D., Yale University

Michel Merle, Assistant Professor (1971)
A.B., M.A., Columbia University; M.F.A., Instituto Allende

BIOLOGY

Edwin A. Boger, Sr., Professor (1968)
A.B., Valparaiso University; M.A., University of Connecticut; Ph.D., Clark University

Carol M. Chauvin-Fortier, Professor (1958)
B.S., Good Counsel College; M.S., State University of New York, Albany; Ph.D., Boston University

John F. Eager, Associate Professor (1952)
B.S., Loyola College; Ed.M., Worcester State College

Terry E. Graham, Professor (1970)
A.B., Suffolk University; M.S., University of New Hampshire; Ph.D., University of Rhode Island

Paul A. Holle, Professor (1957)
A.B., Valparaiso University; M.S., Ph.D., Notre Dame University

William F. Masterson, Associate Professor (1958)
A.B., M.S., M.A., Boston College

Surindar M. Paracer, Professor (1970)
B.S., Punjab University; M.S., South Dakota University; Ph.D., University of California

Thomas L. Roberts, Professor (1965)
A.B., Talladega College; M.S., Trinity University; Ph.D., Clark University

Bruce D. Russell, Associate Professor (1965)
B.S., Illinois College; M.S., University of Arkansas

BUSINESS ADMINISTRATION

Arnold J. Bornfriend, Professor (1975)
A.B., City University of New York; Ph.D., Columbia University

George T. Downey, Professor (1969)
B.S., Worcester State College; M.A., Ph.D., Clark University

Leonard F. Farrey, Professor (1965)
B.S., Ed.M., Worcester State College; Ed.D., University of Massachusetts

Robert J. Hartwig, Professor (1970)
A.B., Providence College; M.A., Ph.D., University of Wisconsin

Donald L. Joyal, Associate Professor (1977)
B.S., New Hampshire College; M.B.A., Bryant College; M.A., Suffolk University; C.A.G.S., Boston State College

Richard S. Juralewicz, Professor (1973)
B.M.E., General Motors Institute of Technology; M.S., Ph.D., Rensselaer Polytechnic Institute

Felix E. Masterson, Professor (1968)
A.B., Assumption College; M.A., Clark University; Dipl. Prof. Ed., University of Connecticut; Ph.D., University of Michigan

Gary McEachern, Assistant Professor (1975)
B.S., Norwich University; M.B.A., Western New England College

Dennis P. Moore, Assistant Professor (1983)
B.S., New Hampshire College; M.B.A., Northeastern University

Maureen C. Stefanini, Professor (1967)
B.S., Ed.M., Worcester State College; Ed.D., Boston University; M.S. Management, Massachusetts Institute of Technology

James J. Swanson, Instructor (1984)
B.S., Bryant College; M.B.A., University of Rhode Island

CHEMISTRY

Alan D. Cooper, Professor (1970)
B.S., Tufts University; M.A., Ph.D., Boston University

Arthur C. Ferguson, Associate Professor (1970)
A.B., Oberlin College; Ph.D., University of Wisconsin

Melvin Merken, Professor (1958)
B.S., M.A., Tufts University; Ed.D., Boston University

Lloyd P. Wheaton, Associate Professor (1965)
A.B., Harvard University, M.S., Northeastern University

Estelle C. Zoll, Professor (1967)
A.B., Boston University; Ph.D., University of Delaware

COMMUNICATION DISORDERS

Anna B. Cohen, Professor (1973)
A.B., Newark State College; M.A., University of Wisconsin; Ed.D., Columbia University

Carol E. Lysaght, Professor (1972)
B.S., Salem State College; Ed.M., Ed.D., Boston University

John F. McLaughlin, Assistant Professor (1968)
B.S., College of the Holy Cross; Ed.M., Worcester State College

Maryann H. Power, Assistant Professor (1979)
A.B., University of Massachusetts; Ed.M., Salem State College

Susan Rezen, Associate Professor (1980)
A.B., State University of New York, Albany; M.S. Purdue University; Ph.D., Syracuse University

COMPUTER SCIENCE

Charles Avedikian, Associate Professor (1975)
B.S., University of Massachusetts; M.B.A., Cornell University; M.S., Worcester Polytechnic Institute

Charles Glassbrenner, Professor (1967)
B.S., M.S., Siena College; M.S., Northeastern University; Ph.D., University of Connecticut

David W. Hilton, Professor (1969)
B.S., Salem State College; Ed.M., Ph.D., Boston College

Alfred C. Johnson, Associate Professor (1979)
B.S., Worcester State College; M.A., Memphis State University

Michael Mulcahy, Assistant Professor (1973)
B.S. Ed., Ed.M., Worcester State College

Virginia Ogozalek, Assistant Professor (1982)
A.B., Colby College; M.S., University of Maine

ECONOMICS

Kee Il Choi, Professor (1970)
A.B., Princeton University; Ph.D., Harvard University

George T. Kelley, Professor (1969)
A.B., College of the Holy Cross; M.A., Boston College; Ph.D., Clark University

F. Stephen Trimby, Assistant Professor (1970)
A.B., Assumption College; M.A., Clark University

EDUCATION

Josefina Bunuan, Professor (1969)
A.B., University of the Philippines; Ed.M., Boston College; Ed. D., Boston University; Dipl. in Ld., Melbourne College, Australia

John R. Dowling, Assistant Professor (1966)
B.S., Ed.M., Worcester State College

Florence G. Fraumeni, Professor (1973)
Ed.B., Rhode Island College; Ed.M., Ed.D., Boston University

Charles Geer, Assistant Professor (1971)
B.S., M.S., State University of New York, Brockport; Ph.D., University of Texas

Nancy E. Harris, Professor (1970)
A.B., Clark University; M.A., University of Massachusetts; Ed.D., Boston University

Nancy A. Johnson, Professor (1968)
A.B., M.A., Clark University; Ed.D., Boston University

Mary Ellen Meegan, Professor (1971)
B.S., Framingham State College; Ed.M., Ph.D., Boston College

Paul F. O'Neil, Associate Professor (1963)
B.S., College of the Holy Cross; B.S., Ed.M., Worcester State College

Chad Osborne, Professor (1970)
A.B., Yale University, M.A., Stanford University; Ed.D., University of Massachusetts

A. Barbara Pilon, Professor (1972)
A.B., Brown University; Ed.M., Rhode Island College; Ph.D., Indiana University

Catherine I. Quint, Professor (1968)
B.S., Worcester State College; Ed.M., Ed.D., Boston University

Eugene M. Scanlon, Associate Professor (1966)
A.B., Brown University; Ed.M., Worcester State College

ENGLISH

James R. Ayer, Professor (1964)
A.B., State University of New York, Albany; M.A., Columbia University; Ph.D., University of Massachusetts

Phyllis A. Crowley, Assistant Professor (1961)
B.S., Worcester State College; M.A., The Catholic University of America

Alfred F. Eddy, Assistant Professor (1964)
A.B., Harvard University; M.A., Trinity College

Robert P. Ellis, Assistant Professor (1965)
A.B., State University of New York, Binghamton, M.A., Boston College

Kenneth Gibbs, Jr., Professor (1970)
A.B., Amherst College; M.A., Rutgers University; M.F.A., Ph.D., University of Massachusetts

Merrill H. Goldwyn, Professor (1968)
A.B., M.A., Harvard University; Ph.D., Columbia University

Linda S. Gordon, Associate Professor (1971)
A.B., Brooklyn College of the City University of New York; A.M., Ph.D., Harvard University

Emmet Grandone, Instructor (1965)
A.B., Clark University; M.A., University of Connecticut

Mary Ellen Herx, Professor (1970)
A.B., Creighton University; M.A., Ph.D., University of Nebraska

Jean E. Johnson, Professor (1969)
A.B., University of Wisconsin; M.A., University of Hawaii; Ph.D., Columbia University

Jeffrey L. Roberts, Professor (1970)
A.B., Southwest Missouri State University; M.A., Missouri University; Ph.D., University of Massachusetts

Richard E. Sullivan, Assistant Professor (1968)
A.B., Providence College; M.A., Boston College

Robert E. Todd, Professor (1957)
A.B., Emerson College; M.A., Clark University; M.A., University of Connecticut

Richard S. Tyrell, Professor (1951)
A.B., Boston College; M.Ed., Boston Teachers College

Robert L. Walker, Professor (1970)
A.B., Bard College; Ph.D., University of Connecticut

Charles Wasilko, Assistant Professor (1970)
A.B., Dickinson College; M.A., Harvard University

FOREIGN LANGUAGES

Francisco Alcala, Professor (1970)
A.B., University of Comillas; M.A., University of Salamanca; M.A., Sorbonne; M.A., Ph.D., New York University

Jennie M. Celona, Professor (1965)
A.B., Emmanuel College; M.A., Middlebury College; Ed.D., University of Massachusetts

Vincent R. De Benedictis, Associate Professor (1957)
A.B., Boston College; M.A., Boston University

Margaret A. Kittredge, Associate Professor (1965)
A.B., Clark University; M.A.T., Harvard University; M.A., Assumption College

Katharine M. Shea, Professor (1961)
A.B., Our Lady of the Elms College; Ed.M., Bridgewater State College; M.A., Smith College; Ph.D., University of Massachusetts

GEOGRAPHY AND GEOLOGY

Loren Gould, Assistant Professor (1959)
A.B., M.A., Clark University; Ed.D., University of Massachusetts

Richard G. Hunt, Assistant Professor (1969)
B.S., Indiana University of Pennsylvania; M.S., Southern Connecticut State University

Ronald W. Hurd, Assistant Professor (1970)
B.S., Ed.M., Worcester State College

Robert E. Lingner, Assistant Professor (1968)
A.B., Clark University; M.A., University of Maine

Robert F. Perry, Jr., Professor (1959)
A.B., Amherst College; M.A., Syracuse University; Ph.D., Clark University

Robert W. Thompson, Assistant Professor (1968)
B.S., Worcester State College; M.A., Clark University

HEALTH SCIENCE

Michael A. Burke, Professor (1969)
A.B., College of the Holy Cross; Ed.M., Worcester State College; M.A.T., Michigan State College; Ph.D., Boston College

Yvonne Chen, Associate Professor (1977)
M.D., Dr. Sun Yat-sen University; M.S., Hong Kong Baptist College; M.Ed., University of Cincinnati

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B.S., Central Connecticut State College; M.S.T., Hartford Seminary Foundation; Ed.M., Salem State College; Ed.D., University of Massachusetts

Donald A. Read, Professor (1972)
A.B., Colorado State College; M.A., University of Maryland; Ed.D., Boston University

Helena Semerjian, Associate Professor (1966)
B.S., Ed.M., Fitchburg State College; Ed.M., Boston University

HISTORY AND POLITICAL SCIENCE

Bruce S. Cohen, Associate Professor (1965)
A.B., M.A., Rutgers University

Clement S. Delaney, Assistant Professor (1965)
A.B., M.A., St. Michael's College

Paul J. Edmunds, Professor (1963)
A.B., College of the Holy Cross; M.A., Harvard University; Ph.D., University of Wisconsin

Bernard Goldsmith, Assistant Professor (1963)
A.B., University of Michigan; M.A., Clark University

Robert G. Kane, Associate Professor (1968)
A.B., College of the Holy Cross; Ed.M., Worcester State College; M.A., Assumption College

Robert F. McGraw, Associate Professor (1965)
B.S., Worcester State College; M.A.T., Harvard University

Frank S. Minasian, Associate Professor (1968)
A.B., Clark University; M.A.T., Assumption College

A. Gibbs Mitchell, Professor (1968)
B.S., Central Connecticut State College; M.A., Ph.D., Boston University

Najib E. Saliba, Professor (1971)
A.B., Miami University; M.A., Ph.D., University of Michigan

Emmett A. Shea, Professor (1962)
B.S., Ed.M., M.A., Boston University; M.A., Boston College

Robert M. Spector, Professor (1963)
A.B., Ed.M., Ph.D., Boston University; J.D., Boston College

David Twiss, Associate Professor (1968)
B.S., Ed.M., Worcester State College; M.A., Assumption College

Cheng Yuan, Professor (1963)
A.B., Colgate University; M.A., Yale University; M.A., Harvard University; Ph.D., Brown University

LIBRARY

Betsey J. Brenneman, Assistant Librarian (1977)
B.S., Kent State University; M.L.S., Syracuse University; M.A.T., Fitchburg State College

Krishna Das Gupta, Associate Librarian (1969)
A.B., Asubosh College; M.A., Calcutta University; M.L.S., Simmons College

Daniel E. Dick, Associate Librarian (1969)
A.B., Amherst College; M.F., Yale University; M.L.S., University of Rhode Island

Ruth Greenslit, Library Assistant (1968)

Pamela McKay, Assistant Librarian (1978)
B.A., Dickinson College; M.S., Case Western Reserve University

William George Piekarski, Assistant Librarian (1983)
A.B., M.L.S., State University of New York, Geneseo

Ruth Webber, Assistant Librarian (1973)
A.A., Mt., Wachusett Community College; A.B., University of Massachusetts; M.L.S., State University of New York, Albany

MATHEMATICS

Vito D. Campo, Professor (1965)
B.Ed., Ed.M., Rhode Island College; M.A., Boston College

John C. Hayes, Professor (1969)
A.B., College of the Holy Cross; Ed.M., Harvard University; M.A., Wesleyan University; M.A., Ph.D., Boston College

W. Mack Hill, Professor (1972)
B.S., Wheeling College; M.S., Ohio State University; Ph.D., University of Cincinnati

Marshall J. Kotzen, Assistant Professor (1969)
B.S., Tufts University; M.S., University of New Hampshire

Robert J. Perry, Professor (1964)
A.B., M.A., Ph.D., Clark University

Robert W. Redding, Professor (1967)
B.S., University of Massachusetts; M.S., University of Rhode Island; Ph.D., Clark University

Kenneth Schoen, Professor (1971)
A.B., University of Connecticut; M.A., Yale University; M.S., Rensselaer Polytechnic Institute; Ph.D., University of Pittsburgh

Manuel Zax, Professor (1968)
A.B., Yale University; Ed.M., Keene State College; Ed.D., Cornell University

MEDIA

David A. Archibald-Seiffer, Assistant Professor (1970)
A.B., Hunter College of the City University of New York; M.A., New York University

William Byers, Assistant Professor (1971)
A.B., Colby College; B.D., Kenyon College; M.Div., Colgate Rochester Divinity School

Paul Davis, Professor (1962)
B.S., Ed.M., Worcester State College; Ed.D., University of Massachusetts

Bernard L. McGough, Associate Professor (1965)
A.B., American International College; Ed.M., Westfield State College; M.S., University of Rhode Island

Garrett Mitchell, Jr., Associate Professor (1970)
B.S., State University of New York, Fredonia; M.S., Ed.S., Indiana University

Vincent Piccolo, Associate Professor (1964)
A.B., Tufts University; M.S.L.S., Simmons College; Ed.M., Boston University

Ann Marie Shea, Associate Professor (1968)
A.B., Anna Maria College; M.A., The Catholic University of America; Ph.D., New York University

MUSIC

Louis J. Celona, Assistant Professor (1967)
B.M., M.M., New England Conservatory of Music; M.A., Middlebury College

Robert Sahagian, Assistant Professor (1968)
B.M., New England Conservatory of Music; M.M., Michigan State University

NATURAL SCIENCE AND PHYSICS

William Belanger, Associate Professor (1967)
B.S., Ed.M., Worcester State College; M.N.S., Worcester Polytechnic Institute

Harold L. Chapman, Professor (1959)
B.S., Ed.M., University of Maine; M.S., Syracuse University; Ph.D., University of Connecticut

Geoffrey J. Garrett, Professor (1968)
B.S., Antioch College; M.A., Ph.D., Princeton University

Robert F. Kelley, Professor (1964)
B.S., Ed.M., Boston University; M.N.S., Worcester Polytechnic Institute

NURSING

Mary K. Alexander, Assistant Professor (1974)
R.N., Jeanne Mance School of Nursing; B.S., University of Vermont; M.S., University of Massachusetts

Anne Brown, Assistant Professor (1977)
R.N., St. Vincent Hospital; B.S., Worcester State College; M.S., Boston University

Jean A. Campaniello, Assistant Professor (1979)
R.N., The Memorial Hospital, Worcester; B.S., Worcester State College; M.S., Boston University; C.A.G.S., Anna Maria College

Barbara Giguere, Instructor (1980)
R.N., Worcester City Hospital School of Nursing; B.S., Worcester State College; M.S., University of Connecticut

Lillian R. Goodman, Professor (1973)
R.N., Peter Bent Brigham Hospital; B.S., M.S., Ed.D., Boston University

Mary Haley, Associate Professor (1976)
R.N., B.S., M.S., Boston College

Mary L. Lovering, Assistant Professor (1974)
R.N., Mary Fletcher Hospital; B.S., Syracuse University; M.S., Boston College

OCCUPATIONAL THERAPY

Donna M. Joss, Assistant Professor (1983)
A.B., University of Michigan; O.T.R., M.S., Ed.D., State University of New York, Buffalo

PHILOSOPHY

Neil F. Brophy, Assistant Professor (1971)
A.B., Assumption College; M.A., Laval University

Gerald Robbins, Associate Professor (1971)
A.B., Rutgers University; M.A., New School for Social Research

Dion Schaff, Professor (1971)
A.B., New College; M.A., Ph.D., Brown University

Courtney Schlosser, Associate Professor (1971)
A.B., George Washington University; Ed.M., Ed.D., Boston University

Donald F. Traub, Professor (1969)
A.B., Iona College; M.A., St. John's University (New York); M.A., Ph.D., Boston College

PHYSICAL EDUCATION

Janet E. Demars, Assistant Professor (1970)
B.S., Boston University; Ed.M., Springfield College

Helen Duquette, Assistant Professor (1969)
B.S., Bridgewater State College; Ed.M., Springfield College

Francis T. Dyson, Associate Professor (1959)
B.S., College of the Holy Cross; M.A., C.A.G.S., Boston University

James Girouard, Assistant Professor (1969)
B.S., Boston University; M.S., Springfield College

John P. Mockler, Associate Professor (1952)
B.S., M.A., Columbia University

Margaret M. Nugent, Associate Professor (1964)
B.S., Russell Sage College; Ed.M., Worcester State College; C.A.G.S., Boston University

PSYCHOLOGY

M. June Allard, Professor (1973)
A.B., M.A., Ph.D., Michigan State University

Eleanor Ashton, Associate Professor (1978)
B.S., New York University; Ed.M., Ed.D., University of Massachusetts

Joyce Cummings, Associate Professor (1977)
A.B., Emmanuel College; M.A., Northeastern University; Ph.D., Boston College

Aldona L. Daly-Boxshus, Assistant Professor (1968)
R.N., Hahnemann Hospital, Worcester; B.S., Clark University; M.A., C.A.G.S., Assumption College

Barbara Desrosiers, Assistant Professor (1973)
A.B., University of Massachusetts; Ed.M., Harvard University

Bernard J. Guarini, Associate Professor (1965)
B.S., College of the Holy Cross; M.A., Clark University; M.A., C.A.G.S., Assumption College

Joline Jones, Professor (1972)
A.B., Ph.D., Syracuse University

Gordon S. Matheson, Associate Professor (1969)
A.B., Olivet College; M.A., C.A.G.S., Assumption College; Ed.D., University of Massachusetts

John M. Nash, Professor (1970)
A.B., M.A., American International College; Ed.D., Boston University

Richard A. O'Connor, Assistant Professor (1968)
B.S., Clark University; M.A., C.A.G.S., Assumption College

G. Flint Taylor, Professor (1952)
A.B., Colby College; Ed.M., C.A.G.S., Boston University; Ph.D., University of Connecticut

James D. Widmayer, Professor (1972)
A.B., M.S., St. John's University (New York); M.A., The Catholic University of America; Ph.D., Fordham University

SOCIOLOGY

Francis L. Brooker, Associate Professor (1970)
A.B., Brandeis University; M.A., Northeastern University

Robert W. Goss, Professor (1956)
B.S., College of the Holy Cross; Ed.M., Fitchburg State College; M.A., Clark University; Ed.D., Boston College

Baheej Khleif, Professor (1972)
Dipl. in Soc. Welfare Policy, M. Soc. Science, Institute of Social Studies, The Hague, Holland; Ph.D., University of Colorado

Frank C. Pizziferri, Associate Professor (1968)
B.S., Boston University; M.S., Illinois Institute of Technology

Faith T. Zéadey, Assistant Professor (1965)
B.S., M.A., Boston College

Matthew Zelman, Assistant Professor (1973)
A.B., Northeastern University; M.A., Boston University

URBAN STUDIES

Francis Amory, Associate Professor (1977)
A.B., M.A.T., Harvard University; M.S.W., Boston University

Harold V. Langlois, Professor (1973)
A.B., University of Rhode Island; M.A., Indiana University; Ph.D., University of Connecticut

Maureen E. Power, Associate Professor (1975)
A.B., Emmanuel College; M.S.W., Ph.D., Brandeis University

Vincent E. Powers, Professor (1972)
A.B., M.A., University of Massachusetts; Ph.D., Clark University

9. Academic Calendars

1984-1985 ACADEMIC CALENDAR

FALL SEMESTER — 1984

September	3	Labor Day — no classes
	4-7	Orientation, advising, and registration of new students
	10	Classes begin: 8:30 a.m.
	21	Last day to add/drop courses
October	8	Columbus Day — no classes
	25	Failure warnings due in Registrar's office
November	2	Last day to make up incomplete grades from spring semester, 1984
	5	Failure warnings issued to students
	7	Last day to elect pass/fail option
	9	Last day to withdraw from courses
	12	Veterans Day — no classes
	13-16	Student evaluation of faculty
	21	Thanksgiving recess: classes end at 12:30 p.m.
	26	Classes resume: 8:30 a.m.
	26-30	Academic advising and registration into major and minor courses
December	4	Registration into distribution and elective courses — no classes
	12	Classes end
	13-21	Examinations (see following Examination Schedule)
	26-28	Makeups of examinations cancelled by inclement weather

SPRING SEMESTER — 1985

January	15	Martin Luther King Day — no classes
	16-18	Advising and registration of new students
	21	Classes begin: 8:30 a.m.
February	4	Last day to add/drop courses
	18	Washington's Birthday — no classes
March	8	Failure warnings due in registrar's office
	8	Last day to make up incomplete grades from fall semester, 1984
	18-22	Spring recess
	25	Classes resume: 8:30 a.m.
	25	Failure warnings issued to students
	26	Last day to elect pass/fail option and to withdraw from courses
April	5	Good Friday — no classes
	15	Patriot's Day — no classes
	22-26	Student evaluation of faculty
	22-26	Academic advising and registration into major and minor courses
	30	Registration into distribution and elective courses — no classes
May	7	Classes end
	8-16	Examinations (see following Examinaton Schedule)
	25	Commencement
	25	Semester ends

EXAMINATION SCHEDULE
FALL SEMESTER, 1984

CLASS	EXAM TIME		
TR 1:00	8:30 - 11:30	Thursday	December 13
TR 10:00	12:30 - 3:30		
MWF 12:30	8:30 - 11:30	Friday	December 14
MWF 9:30	12:30 - 3:30		
MWF 3:30	8:30 - 11:30	Monday	December 17
MWF 2:30	12:30 - 3:30		
MWF 11:30	8:30 - 11:30	Tuesday	December 18
MWF 8:30	12:30 - 3:30		
TR 11:30	8:30 - 11:30	Wednesday	December 19
TR 8:30	12:30 - 3:30		
MWF 1:30	8:30 - 11:30	Thursday	December 20
MWF 10:30	12:30 - 3:30		
Mon/Fri 3 hr block	8:30 - 11:30	Friday	December 21
Wed/Other 3 hr block	12:30 - 3:30	Friday	December 21
Make-up for* Dec. 13-17	8:30 - 11:30 12:30 - 3:30	Wednesday	December 26
Make-up for* Dec. 14-19	8:30 - 11:30 12:30 - 3:30	Thursday	December 27
Make-up for* Dec. 18-21	8:30 - 11:30 12:30 - 3:30	Friday	December 28

*Time same as originally scheduled.

EXAMINATION SCHEDULE
SPRING SEMESTER, 1985

CLASS		EXAM TIME		
MWF	1:30	8:30 - 11:30	Wednesday	May 8
MWF	10:30	12:30 - 3:30		
TR	1:00	8:30 - 11:30	Thursday	May 9
TR	10:00	12:30 - 3:30		
MWF	12:30	8:30 - 11:30	Friday	May 10
MWF	9:30	12:30 - 3:30		
MWF	3:30	8:30 - 11:30	Monday	May 13
MWF	2:30	12:30 - 3:30		
MWF	11:30	8:30 - 11:30	Tuesday	May 14
MWF	8:30	12:30 - 3:30		
TR	11:30	8:30 - 11:30	Wednesday	May 15
TR	8:30	12:30 - 3:30		
Mon/Fri 3 hr block		8:30 - 11:30	Thursday	May 16
Wed/Other 3 hr block		12:30 - 3:30	Thursday	May 16

1985-1986 ACADEMIC CALENDAR

FALL SEMESTER — 1985

September	2	Labor Day — no classes
	3-6	Orientation
	9	Classes begin: 8:30 a.m.
	23	Last day to add/drop courses
October	7	Columbus Day — no classes
	22	Failure warnings due in Registrar's office
	25	Last day to make up incomplete grades from spring semester, 1985
	30	Last day to elect pass/fail option
November	1	Failure warnings issued to students
	8	Last day to withdraw from courses
	11	Veterans Day — no classes
	12-15	Student evaluation of faculty
	20-27	Academic advising and registration into major and minor courses
	27	Thanksgiving recess: classes end at 12:30 p.m.
December	2	Classes resume: 8:30 a.m.
	3	Registration into distribution and elective courses — no classes
	11	Classes end
	12-20	Examinations (see following Examination Schedule)
	23, 26, 27	Makeups of examinations cancelled by inclement weather
	31	Semester ends

SPRING SEMESTER — 1986

January	17	Academic advising
	20	Martin Luther King Day — no classes
	21	Classes begin: 8:30 a.m.
February	4	Last day to add/drop courses
	17	Washington's Birthday — no classes
March	8	Failure warnings due in Registrar's office
	14	Last day to make up incomplete grades from fall semester, 1985
	17-21	Spring recess
	24	Classes resume: 8:30 a.m.
	24	Last day to withdraw from courses
	26	Last day to elect pass/fail option
	28	Good Friday — no classes
April	21	Patriot's Day — no classes
	22-28	Student evaluation of faculty
	22-28	Academic advising and registration into major and minor courses
	29	Registration into distribution and elective courses — no classes
May	7	Classes end
	8-16	Preparation and examinations (see following Examinaton Schedule)
	24	Semester ends
	24	Commencement

EXAMINATION SCHEDULE
FALL SEMESTER, 1985

CLASS	EXAM TIME		
TR 10:00	8:30 - 11:30	Thursday	December 12
TR 1:00	12:30 - 3:30		
MWF 9:30	8:30 - 11:30	Friday	December 13
MWF 12:30	12:30 - 3:30		
MWF 8:30	8:30 - 11:30	Monday	December 16
MWF 12:30	12:30 - 3:30		
TR 8:30	8:30 - 11:30	Tuesday	December 17
TR 11:30	12:30 - 3:30		
MWF 10:30	8:30 - 11:30	Wednesday	December 18
MWF 1:30	12:30 - 3:30		
MWF 3:30	8:30 - 11:30	Thursday	December 19
MWF 2:30	12:30 - 3:30		
Mon/Fri 3 hr block	8:30 - 11:30	Friday	December 20
Wed/Other 3 hr block	12:30 - 3:30	Friday	December 20
Make-up for Dec. 12	8:30 - 11:30	Monday	December 23
13	12:30 - 3:30		
Make-up for Dec. 16	8:30 - 11:30	Thursday	December 26
17	12:30 - 3:30		
Make-up for Dec. 18	8:30 - 11:30	Friday	December 27
19-20	12:30 - 3:30		

EXAMINATION SCHEDULE
SPRING SEMESTER, 1986

CLASS	EXAM TIME		
MWF 10:30	8:30 - 11:30	Thursday	May 8
MWF 1:30	12:30 - 3:30		
TR 8:30	8:30 - 11:30	Friday	May 9
TR 11:30	12:30 - 3:30		
MWF 8:30	8:30 - 11:30	Monday	May 12
MWF 11:30	12:30 - 3:30		
MWF 9:30	8:30 - 11:30	Tuesday	May 13
MWF 12:30	12:30 - 3:30		
TR 10:00	8:30 - 11:30	Wednesday	May 14
TR 1:00	12:30 - 3:30		
MWF 2:30	8:30 - 11:30	Thursday	May 15
MWF 3:30	12:30 - 3:30		
Wed/Other 3 hr block	8:30 - 11:30	Friday	May 16
Mon/Fri 3 hr block	12:30 - 3:30	Friday	May 16

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